PLANNING BOARD

Tuesday, April 23, 2024 at 4:30 PM
Hybrid Meeting, Room 24, Ground Floor
City Hall

MEMBERS
Brandon Mazer, Chair
Justin Barker, Vice Chair
Marpheen Chann
Sean Murphy
David Silk
Austin Smith
Maggie Stanley

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AGENDA:

WORKSHOP MEETING ONLY - 4:30 PM

1. ROLL CALL AND DECLARATION OF QUORUM

1

2. COMMUNICATION AND REPORTS

3. REPORT OF ATTENDANCE AT THE MEETING HELD ON APRIL 9, 2024. ATTENDANCE WILL BE ADDED AS SOON AS IT IS FINALIZED.

4. REPORTS OF DECISIONS AT THE MEETING HELD ON APRIL 9, 2024. DECISIONS WILL BE ADDED AS SOON AS THEY ARE FINALIZED.

5. NEW BUSINESS

i. Major Site Plan and Site Location of Development; 1 Bean Pot Circle; Northeastern University, Applicant. The Planning Board will hold a hybrid workshop to consider a proposal to construct a 238,000 square foot Learning, Research & Collaboration Building, renovation of the 58,000 square foot Bean Building to create a business incubator space, construction of a 234,550 square foot parking garage, and development of a 7,500 square foot childcare facility. Other improvements include replacement of the existing pier on the property, and the development of new public open spaces and pathways. The subject property totals approximately 24 acres, including submerged lands, and is zoned B-5 Urban Commercial and also located within the Roux Institute Institutional Overlay Zone. A project and plan summary are available for viewing on the city's CSS Portal (https://css.portlandmaine.gov/) by referencing Plan Number PL-002724-2023.

ii. Major Site Plan and Conditional Use; 1060 Westbrook Street; Giri Hotel Management, Applicant. The Planning Board will hold a hybrid workshop to consider a proposal to construct a new three-story, 120-room Hyatt Studios Hotel, with 106-space surface parking lot at 1060 Westbrook Street. The subject property totals 4.03 acres, and is zoned AB Airport Business zone. A project and plan summary are available for viewing on the city's CSS Portal (https://css.portlandmaine.gov/) by referencing Plan Number PL-002815-2024 and CU-002828-2024.

Memorandum
Planning & Urban Development Department

To:	Chair Mazer & Members of the Planning Board
From:	Zach Powell
Date:	April 19, 2024
Re:	1 Bean Pot Circle
Project ID:	PL-002724-2023
Meeting Date:	April 23, 2024

I. INTRODUCTION

The Initiative for Digital Engineering and Life Sciences (IDEALS) & Northeastern University has submitted a Major Site Plan and Site Location of Development (SLOD) application to facilitate the construction of a ±238,000 square foot post-secondary education building with on-site restaurant (Identified in **Figure 1** as the Learning, Research & Collaboration building), construction of a ±241,950 square foot mixed-use building with 625 automobile parking spaces and ±7,500 square feet of daycare facility space, redevelopment of the ±58,000 square foot Cannery Building, and associated site improvements & landscaping. This application is the first site plan application reviewed under the Roux Institute Institutional Overlay Zone (hereafter referred to as Roux IOZ), which was approved by the City Council on February 6, 2023, under Orders 125-22/23 & 127-22/23.



Figure 1: Phase 1 Rendered Site Plan

The first workshop for the project was held on February 13, 2024 and provided an overview of the project. At the workshop, Board members requested additional discussion and information related to the transportation impacts of the project at a second workshop. This memorandum is intended to provide an overview of the transportation elements of the project and an update on the review of the application by City Staff.

The Planning and Urban Development Department mailed 81 notices advertising this meeting to property owners within 500 feet of the site. A legal advertisement ran in the April 11, 2024, and April 12, 2024 editions of the *Portland Press Herald*.

Applicant: IDEALS & Northeastern University
Applicant Representative: Denise Cameron, Woodard & Curran

II. REQUIRED REVIEWS & REQUESTED TRANSPORTATION WAIVERS

Review	Applicable Standards
Roux IOZ	Section 8.5.7
Major Site Plan Review	Section 14.6
Historic Preservation	Sections 8.5.7 (J) & 17.7.1
B-5 Design Review Standards	Design Manual
Site Location of Development	Technical Manual Section 14

Waiver Requests	*Applicable Standards*
Parking garage space width of 8.5'	City of Portland Technical Manual §1.10 Parking Lot and Parking Space Design – Standard parking spaces shall be 9 feet wide by 18 feet long, except that low turnover parking spaces, such as those used by residents or employees, may be designed with a width of 8.5' and considered a standard parking space
To use concrete as a sidewalk material on Sherwood Street, instead of asphalt	City of Portland Technical Manual – Appendix 1: Sidewalk Materials Policy

III. PROJECT DATA

Existing Zoning	B-5 Urban Commercial Zone Roux IOZ		
Property Size	1,152,589 square feet (~26.46 acres including 12.86 acres of submerged land)		
Existing Use	Vacant		
Proposed Use	Post-secondary school	230,000 square feet	
	Parking	234,450 square feet (625 spaces)	
	Office	58,000 square feet	
	Restaurant	8,000 square feet	
	Daycare facility	7,500 square feet	
	Existing	**Proposed**	**Net Change**
Building Footprint	47,160 sq. ft.	49,030 sq. ft.	+96,190 sq. ft.
Building Floor Area	58,000 square feet	537,950 square feet	+479,950 square feet
Parking Spaces	171	625 structured 14 surface	+468
Bicycle Parking Spaces	-	166	+166
EV Charging Stations	-	24	24

IV. FEBRUARY 13, 2024 WORKSHOP

At the workshop, the following clarifying questions were raised (Responses in bold and italic):

- Whether there would be parking restrictions on Sherwood Street east of Veranda Street *(As part of creating a shared-use facility along Sherwood Street, on-street parking would be removed.)*
- Whether the improvements on Sherwood Street are the only off-site improvements shown in the application materials *(At the time of the workshop, yes, and continuing review of the Traffic Movement Permit & site plan will change this.)*
- An overview of the TDM process *(TDM plans identify the existing multi-modal transportation system, baseline travel demand & supply data, setting short- and long-term targets to reduce single-occupancy automobile trips, and identify programmatic & capital strategies to achieve those goals. Sites with approved TDM plans are required to submit annual reports demonstrating how successful the plan is being implemented and adjust as needed to meet short- and long-term goals.)*
- Why access was proposed to be limited to some, but not all, spaces in the parking garage at the opening of the site *(Originally, the garage proposed 700 spaces and as a TDM measure, limiting access to spaces would help encourage visitors to use other modes of transportation. Based on discussions with staff, the number of spaces has been reduced to 625. While this will provide more spaces than necessary when opening the site in 2027, by full buildout proposed in the site plan application, the number of parking spaces will require 30% of site users to not use a single-occupancy automobile.)*
- Whether the applicant team is considering a shuttle service to off-site lots *(The applicant team is continuing to discuss potential DOT lots that could serve as park-and-ride sites for a shuttle, but is prioritizing transit service onto the site through METRO with Route 5 & 7.)*

Overall, public comments expressed support for the project, and the following questions and concerns were raised:

- Whether there would be sufficient space for an off-ramp based on the location of the parking garage and the shared-use pathway
- Whether off-site mitigation would impact on-street parking for commercial uses on Veranda Street
- Whether modified METRO service would terminate at the site or continue to points north and south of the site
- Support for TDM strategies such as requiring payment for cars dropping off visitors and using downtown parking rates for the structured parking garage.
- Provisions for community access to active recreation space
- Comments on the TMP application from traffic engineer Bill Bray (Barton & Loguidice) on behalf of the East Deering Neighborhood Association

Closing Board remarks focused on the following transportation elements of the project:

- Clarification on the status of METRO service coming to the site (The Applicant team stated that the 7 would stop on-site and there are continuing discussions to modify Route 5 to also stop on-site.)
- Request that the applicant team show a site plan that includes the proposed ramp from I-295 (A copy of the site plan including the proposed ramp has not been submitted.)
- Ensure that Bill Bray's comments were relayed to Tom Errico (Bill Bray's comments were emailed to Tom Errico and have been included as part of the Traffic Movement Permit review, with responses provided by the applicant team in Attachment 6 on Page 255.)

- Request for the applicant team to contextualize the level of METRO service at the current site (100 Fore Street), as compared to the project site, given that the current mode split is being used as supporting evidence for the project's proposed mode split.
- Concern about whether the work proposed in the DOT RAISE grant application will be awarded and the success of the site in the event that the grant is not awarded.
- Request the applicant team to provide more information on internal site bicycle and pedestrian connections.
- Concern that the site has too much automobile parking.

V. STAFF REVIEW

Before the last workshop, City staff submitted transportation comments on the project focusing on:

- Revising the TDM Plan to provide more specificity on proposed measures
- Parking Demand Analysis and clarification on parking ratio and estimated parking demand
- Increase in the size of the perimeter access loop
- Submission of a Transportation Access and Circulation Plan and updated plan for the Sherwood Street right-of-way; and
- Demonstrating how Sherwood Street currently proposes to serve as the sole connection point for the site for cyclists & pedestrians meets community engagement and multi-modal transportation goals

The Applicant team submitted a response letter (Document A2) and provided the following application updates:

- Inclusion of a parking demand analysis in a revised TDM plan setting a peak demand at the opening day of 581 spaces (2027) and 881 by 2032 (624 automobile spaces proposed).
- Increasing the width of the coastal pathway to 12 feet
- Submitting updated Transportation Access and Circulation and Sherwood Street right-of-way plans

City Staff are continuing to review updated application materials, with Transportation Program Manager Bruce Hyman providing comments on the updated TDM plan in Attachment 5. Since the previous workshop, City Staff has continued to provide comments and review updated materials for the MaineDOT TMP application. Staff have identified key mitigation measures that collectively will address the relevant site plan & Roux IOZ transportation standards. The following section summarizes these recommended mitigation measures and what standards they are intended to satisfy.

VI. SITE PLAN & IOZ OVERLAY TRANSPORTATION REVIEW STANDARDS

A total of 11 review standards (4 site plan & 7 Roux IOZ) focus on the transportation impacts of the project. The following section provides a review of these transportation standards:

Site Plan Transportation Standards (Section 14.6.1)

The project is being reviewed under a Traffic Movement Permit (TMP) application to assess impacts on the surrounding street network and anticipated increases in traffic congestion. MaineDOT is leading the TMP review and will be the review authority issuing the TMP. However, Consulting Traffic Engineer Tom Errico has provided a running list of comments and information requests for the TMP that are included in Attachment 4. The Planning Board's review purview is focused on the City's Site Plan transportation standards and any relevant IOZ requirements described below.

A. Impact on surrounding street systems

City Staff have recommended several mitigation measures to address the projected impacts of the project on the surrounding street system. Overall, the adoption of the proposed mitigation measures and a condition of approval requiring the Applicant to receive a Traffic Movement Permit for the proposed work would demonstrate compliance with this standard. A detailed explanation of the mitigation measures proposed as part of the site plan review is described below in *Section VII Recommended Site Plan Mitigation*.

B. Access and circulation

The Applicant has included updated plans with a 10-foot wide shared-use path along Sherwood Street and a wider circulation path on-site to improve transitions from the City right-of-way onto the site. Internally, the applicant has provided a robust on-site walking and cycling network to promote easy connections.

Recommended site plan mitigation measures for creating a connection under Tukey's Bridge, improving the approaches to Tukey's Bridge, and establishing a shared-use path along Sherwood Street east of Veranda to support safer connections to the site for all users and easier, lower-stress connections for pedestrians and cyclists.

As designed, there is no direct internal access proposed from the parking structure to the daycare center, requiring users that park in the garage exit and walk around to the southern side of the building to enter the daycare center. Staff request that the Applicant identify a potential door at Level 2 of the parking structure deck (which may necessitate a transition staircase) to allow direct access into one of the staircases for the daycare center or explore other alternatives that would allow a direction connection to the daycare facility.

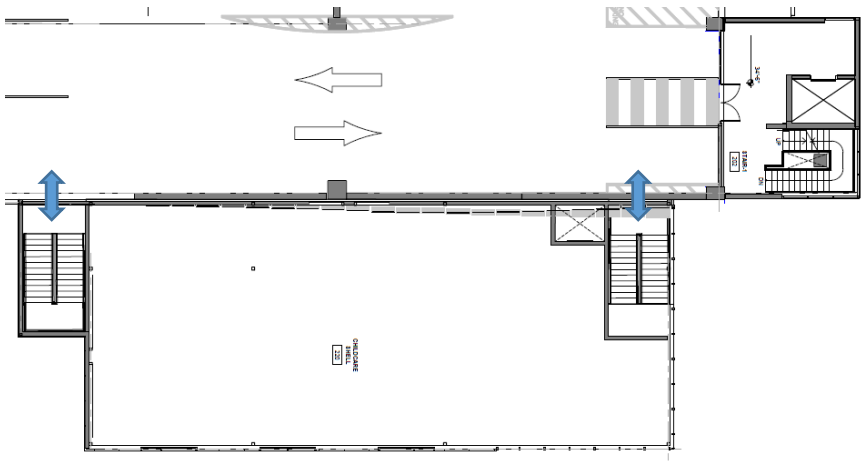


Figure 2: Floor Plan of Structured Parking Garage & Daycare Center with options for internal connections shown with blue arrows. Currently, no internal connection is proposed between the garage & daycare center.

C. Public transit access

The application proposes the construction of an on-site transit shelter that connects to the public sidewalk system. No further action is required by the applicant.

D. Parking

The Applicant has submitted an updated TDM plan that includes a parking demand analysis for the site. City staff are currently reviewing the parking demand analysis included in the TDM plan and will provide comments at the April 23rd workshop.

Consulting Traffic Engineer Tom Errico supports the submitted waiver for reducing the required width of the parking spaces from 9 feet to 8.5 feet based on the anticipated low vehicle turnover.

E. Transportation demand management (TDM)

Transportation Program Manager Bruce Hyman has requested additional updates to the TDM plan to provide greater clarity on the proposed TDM measures. As mentioned in previous comments, Staff have requested that the applicant establish a framework for all envisioned phases of development, including a data collection plan for uses not included in the subject application (e.g., residential). Staff encourages establishing a plan differentiating parking passes by types of garage users, as well as installing permanent bicycle & pedestrian counters at shared-use pathway entrances to the site. Final comments will be provided to the applicant in coordination with continuing discussions regarding the TMP mitigation package.

Roux IOZ Transportation Standards (Section 8.5.7)

C(2)Community engagement and connectivity

As mentioned during the last workshop, the submitted design proposes a shared-use path along Sherwood Street that serves as the sole access point for cyclists & pedestrians (Sherwood Street). The limited access raised questions on whether the site would successfully be welcoming to the surrounding community and reduce dependence on automobiles accessing the site.

Staff have recommended the creation of an additional connection under Tukey's Bridge to connect to existing shared-use paths in the City and expand low-stress, off-street connections to the peninsula and points southwest.

E(1) Transportation Demand Management

Refer to site plan standard explanation in the previous section.

E(2) Traffic Movement Permit

As mentioned under the Impacts on surrounding street system section, the project continues to be reviewed under a Traffic Movement Permit by MaineDOT. Planning Staff and MaineDOT continue to review the TMP application and will provide updates as the TMP review progresses.

E(3) Bicycle and pedestrian access and safety

Based on feedback from the last comment letter, the Applicant submitted an updated graphic of the Transportation, Access, and Circulation Plan. Recommended mitigation for the project will result in updates to this plan to show the connection under Tukey's Bridge to the Back Cove Trail.

Overall, the site design has promoted transit access to the site through a new on-site transit shelter, waiting area for buses, and endorsing the proposed mitigation to allow left-hand turns from Veranda Street onto I-295 to enable easier access for METRO Route #5.

A significant number of bicycle parking spaces (166) have been provided. The application has demonstrated that the number of proposed automobile parking spaces for the first phase will meet traditional mode share expectations and be capped to promote a reduction in the reliance on single-occupancy vehicles in future development phases.

Sherwood Street is proposed to be improved with a new sidewalk and a shared-use path to provide a safer connection to the surrounding shared-use network. City Staff are requesting additional information on utility relocation as part of the redesign and how any conflicts are proposed to be addressed.

E(4)Parking

The applicant has submitted a parking demand analysis that estimates 581 parking spaces will be required at the issuance of a Certificate of Occupancy for Phase 1 and that the demand would increase to 881 spaces five years after (~2032). The proposed garage would include 610 automobile spaces to curb parking demand at the site and meet the proposed mode share envisioned in the mid-term in the TDM plan.

E(5)Circulation

The applicant has updated the perimeter access loop to provide a consistent 12-foot width along the southern, eastern, and western portions of the site, which staff finds acceptable. The loop will include intermittent automobile access for the Bean Building for deliveries and maintenance. Overall, the campus promenade and internal campus pathways provide numerous and direct connections to site features with complementary lighting, signage, and landscaping.

VII. RECOMMENDED SITE PLAN MITIGATION

Figure 4 on Page 9 identifies preliminary mitigation that is recommended as part of the site plan application (in blue) and mitigation measures under consideration for the TMP (in orange) to give the Board and public an understanding of how the recommended site plan mitigation measures may relate to potential TMP mitigation.

1. Shared-use path connection Under Tukey's Bridge from Back Cove Trail to Site

Currently, the site only proposes one shared-use pathway connection to the site via Sherwood Street. In meeting the contemplated high multi-modal goals for the site, providing safe, low-stress access is key to encouraging more site users to walk or bike to the site. Establishing a direct, off-road connection under Tukey's Bridge achieves this goal and provides connections to the Back Cove Trail & peninsula.

2. Redesign and widen the approach to the shared-use path on the west side of Tukey's Bridge

The current approach to Tukey's Bridge creates a pinch point and severe angle for cyclists to navigate. With the recommended connection under Tukey's Bridge and additional travelers to the site, updating and widening the portion of the Back Cove Trail that joins the existing



Figure 3: Current approach to Tukey's Bridge

pathway and recommended shared-use path under Tukey's will create a smoother connection point for cyclists.

3. Create a shared-use path along Sherwood Street east of Veranda Street

Currently included in the application materials, a shared-use path on the northern side of Sherwood Street is proposed to connect cyclists & pedestrians from Veranda Street to the site. The connection will ensure connections from cyclists on Veranda Street to use Sherwood Street and the site as a connection to the Back Cove Trail and Tukey's Bridge to access the peninsula and southwestern points. The proposal also includes a sidewalk on the south side of Sherwood Street from Veranda Street to the project site. Additionally intersection improvements at Sherwood Street and Veranda Street are also being considered, such as the installation of speed tables or raised interctions and raised crosswalks.

4. Address sight distance, turning movement conflicts & traffic speed concerns at intersection of Sherwood & Veranda Streets

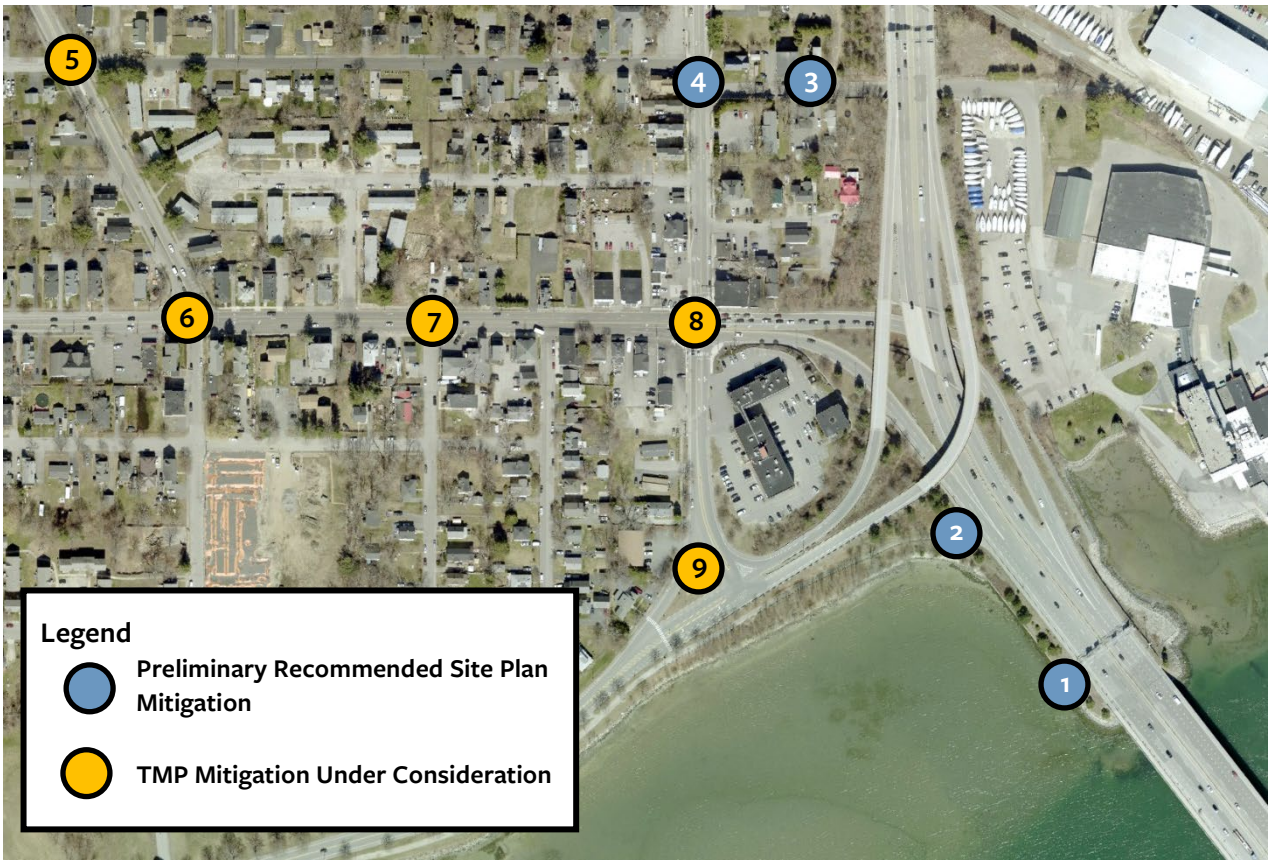
For the review of the Traffic Movement Permit, the applicant team analyzed the intersection of Veranda & Sherwood Street to determine whether a signal was warranted based on safety and traffic volume for existing and proposed traffic. The applicant's analysis concluded that a signal is not warranted for the current proposed phase of work, but is anticipated that a signal will likely be warranted in later development phases if the site were to be built out accorindg to the Institutional Development Plan. Given that a signal is not warranted under the TMP, City Staff have recommended consideration of a speed table/raised intersection to slow down traffic and provide greater visibility for cyclists and pedestrians who may use the western portion of Sherwood Street to get to and from the site or to demonstrate other traffic calming measures that may be appropriate to MaineDOT and the City.

VIII. NEIGHBORHOOD MEETING & PUBLIC COMMENT

The applicant held a Neighborhood Meeting on December 13, 2023, and 46 people attended the meeting. Comments focused on parking on and off-site, the scope of the traffic study, how future growth is being integrated into the design of the site, and maintenance of transportation facilities (e.g., bicycle lanes, bus stops).

The Planning & Urban Development Department has received three public comments. Comments generally focus on providing a direct shared-use connection under Tukey's Bridge to improve safer connections, questions related to the Traffic Movement Permit application, and concerns about the volume of traffic generated by the project in the surrounding neighborhood.

Figure 4: Preliminary Recommended Site Plan Mitigation & TMP Mitigation Under Consideration. Note: Final TMP related mitigation measures will be finalized as part of the TMP Permit by MaineDOT as part of in coordination with City staff. Mitigation shown on the map below is for illustrative purposes only.



Preliminary Recommended Mitigation – Site Plan	
1	**Shared-use path connection Under Tukey's Bridge from Back Cove Trail to Site**
2	**Redesign and widen approach to shared-use facility on Tukey's Bridge**
3	**Create shared-use path along Sherwood Street east of Veranda Street**
4	**Address sight distance & speed concerns at intersection of Sherwood & Veranda Streets**
Mitigation Under Consideration – Traffic Movement Permit (TMP)	
5	**Explore installation of a raised crosswalk at Presumpscot & Sherwood Street; Address sight distance & speed concerns on Veranda Street at Kensington Street & Arcadia/Fairfield Streets**
6	**Consider straightening/better defining NW Presumpscot approach lane(s) to intersection and decrease length of northern Presumpscot pedestrian crossing**
7	**Address High Crash Incidence between Veranda & Presumpscot Streets; Explore potential for improved bicycle connectivity**
8	**Modifications at Washington Avenue/ Bates/Veranda/I-295 Exit 8 Ramps Intersection**
9	**Explore intersection redesign at Bates Street/Baxter Boulevard/I-295 Exit 9 Ramps.**

IX. ATTACHMENTS

STAFF ATTACHMENTS

1. City Zoning Worksheet
2. City Site Plan Worksheet
3. Peer Reviewer Comments
4. Annotated IDP with Requested Updates
5. TMP Comments and Requested Information
6. Annotated TDM Plan with Requested Updates
7. Draft Section 7 Traffic Impact Study 2024-02-16

APPLICANT DOCUMENTS

A. Summary
A1. February 5, 2024 Response Letter
A2. March 28, 2024 Response Letter
B. Major Site Plan Checklist
C. Permitting & Approvals
D. Zoning
E. Zoning Analysis Table
F. Waiver Table
F1. Waiver Table 2024-03-28
F2. Supporting Waiver Memorandum (Lighting)
G. Right, Title, & Interest
H. Transportation Standards
I. TMP Application
J.TDM Plan 2023-11-17
J1. TDM Plan 2024-03
K. Environmental Quality Standards
L. Stormwater Management Report
L1. Stormwater Management Report 2024-03
L2. Wastewater Capacity Authorization 2023-12-12
M. SLOD Report
N. Sustainability Charter
O. Infrastructure & Safety Standards
P. Site Design Standards
Q. Comprehensive Plan Standards
R. Construction Management Plan 2023-09-14
R1. Construction Management Plan 2024-01-25
S. October 30, 2023 Community Advisory Group Meeting Summary
T. December 13, 2023 Neighborhood Meeting Summary
U. Enlarged Set of Figures
V. EV Charging Demand Study
W. IDP Page Updates

PLANS

A. Site Plan Set
A1. Site Plan Set 2024-03-27
B. Rendered Site Plan
B1. Rendered Site Plan 2024-03-27
C. Landscape Plans
C1. Landscape Plans 2024-03-22
D. Shadow Study Plans
E. Signage Plans
E1. Signage Plans 2024-03-22
F. Site Security, Lighting and Photometrics Plans
F1. Site Security, Lighting and Photometrics Plans 2024-03-22
G. Survey
H. Elevations – Cannery Building
I. Elevations – Learning, Research & Collaboration Building
J. Elevations – Structured Parking & Daycare Center Building
J1. Elevations - Structured Parking & Daycare Center Building 2024-03-22
K. Floor Plans – Cannery Building
L. Floor Plans – Learning, Research & Collaboration Building
M. Floor Plans – Structured Parking & Daycare Center Building
M1. Floor Plans – Structured Parking & Daycare Center Building 2024-01-31
M2. Floor Plans – Structured Parking 2024-03-22
M3. Floor Plans – Daycare Center 2024-03-22
N. Sherwood Street Plans
N1. Sherwood Street Plans 2024-03-21
O. Average Grade Calculation
P. Learning, Research & Collaboration Building Vestibule Rendering

PUBLIC COMMENT

PC 1. Richard Weare (February 24, 2024)
PC 2. East Deering Neighbors (February 25, 2024)
PC 3. Allison Brown (April 15, 2024)
PC4. Cheryl Leeman (April 19, 2024)

Zoning Worksheet | January 30, 2024 | PL-002724-2023 | 1 Bean Pot Circle
Submission #1: November 21, 2023
Planner: Zach Powell (zpowell@portlandmaine.gov)

Zoning Use Review (Article 6)

Use Permissions (Table 6-A – Table 6-F)

Proposed Use	*Zones*	*Permitted, Conditional or Accessory Use*
General office (>5,000 SF)	***B-5 & Roux IOZ***	Permitted.
Laboratory and research facility		
Off-street parking		
Post-secondary school		
Preschool facility		
Restaurant		

Zoning Performance Standards (Sec. 6.8)

Standard	*Discussion*	*Finding*
§6.8.8(A)	Overview: The proposed design screens the majority of parking and accessory site elements. The one exception is the first two floors of the western façade of the Structured parking & preschool facility building, which will be located next to a public open space (Perimeter Access Loop).	Not Met.
	Updates Requested • Update architectural drawings to include screening for the first two levels of the Structured parking & preschool facility building.	

Zoning Dimensional Review (Article 7)

Dimensional Standards (Table 7-A – Table 7-H)

Standard	*Requirement - IOZ*	*Proposed – LRC building*	*Proposed – Structured parking & preschool facility building*	*Finding*
Structure height	Comply with Roux Height Map	75' Height Zone: **53.2'** 150' Height Zone: **128.3'** 155' Height Zone: **133.1'**	75' Height Zone: **66.2'** 155' Height Zone: **86.7'** 170' Height Zone: **66.2'**	Met.

Supplemental Dimensional Standards (Sec. 7.4)

Standard	*Requirement 1*	*Requirement 2*	*Proposed*	*Finding*
7.4.3(B)(2)(c)	Photovoltaic structures can have a maximum height of 8 feet and must be setback from the building façade 1' for 1' of the proposed height.	4-6' heights	Setback 12+' from building edges	Met.

Roux IOZ Standards (§8.5.7)

Applicability Standards (§8.5.7(A))

Standard	Discussion	Finding
Applicability	Overview: Please refer to the accompanying site plan worksheet on the conformance of the submitted application. Comments included in Attachment 3 from Zoning Administrator Ann Machado have requested clarification on how average grade is calculated, clarification on the term *approximate FEMA flood zone* line, and updating the site plan set to show the 25-foot shoreland zoning setback. As an advisory note, a floodplain permit application will need to be submitted as part of the building permit process for new construction and elevation certificates. Updated floodplain maps are anticipated to be implemented within the summer of 2024.	Not Met.
	Updates Requested • Revise application materials to satisfy requested updates identified in Attachment 3.	

Phasing and Monitoring (§8.5.7(B))

Standard	Discussion	Finding
Monitoring and Amendments	Overview: Monitoring reports are required to be filed every three years, which will be required in 2026. Minor updates to the IDP have been identified in Attachment 5 and do not rise to the level of an IDP amendment. Updates to the IDP are reviewed by the Planning Authority.	Not Met.
	Updates Requested • Submit an updated copy of the IDP incorporating the proposed changes identified in Attachment 5.	
Public Space	Overview: The proposed site plan and landscaping plan create a complete design through the use of active and passive recreation facilities, plantings & gardens, and shared-use pathways that define future development blocks. At this time, Phase 1 does not propose active construction concurrent with other proposed operations of the Institute. Additional clarification may need to be provided if the site plan is phased.	Met at this time.
Minor & Major Amendments	Overview: Based on the review of the updates that need to be made to the IDP, the changes do not rise to a level that meet a minor or major amendment threshold. No further action is required.	Met.

Uses (§8.5.7(C))

Standard	Discussion	Finding
Overview of Uses	Overview: The subsection provides an overview of permitted uses. The proposed application aligns with the envisioned and permitted uses for the campus. No action is needed.	Met.
Community Engagement and Connectivity	Overview: The proposed design includes passive and active public open space along the waterfront and building entrances to enhance connectivity for visitors. Public space on the ground floor of the Bean Building, as well as a maker's space and café in the	Not Met.

	academic building, promote social permeability between indoor and outdoor spaces for members of the public while providing separate meeting/recreational space on upper floors for students & faculty. Public open spaces are proposed to be accessed through shared-use connections, which support the reduction of automobile trips to and on-site. Clarification should be provided on how the sole shared-use connection on Sherwood Street will foster connectivity and community engagement.	
	Updates Requested • Submit a narrative and/or figures that demonstrate how the Sherwood Street connection will achieve connectivity and community engagement with the surrounding neighborhood.	
Ground-floor Uses	Overview: All of the buildings in the submitted application include ground-floor community-oriented uses. No further action is required.	Met.
Hotel Use Standards	Overview: Not applicable. The submitted application does not include hotel uses.	Met.
Dimensional Requirements (§8.5.7(D))		
Standard	***Discussion***	***Finding***
Applicability	Overview: The submitted application does not comply with all of the zoning performance standards and IOZ dimensional requirements.	Not Met.
	Updates Requested • Update the application to comply with zoning performance standards and IOZ dimensional requirements.	
Minimum and Maximum Street wall heights	Overview: The proposed Structured parking & preschool facility building and learning & research center have minimum street wall heights of 45 and 51 feet, respectively. Both buildings provide stepbacks >10 feet at 45 and 51 feet respectively. No further action is required.	Met.
Stepbacks	Overview: The proposed Structured parking & preschool facility building provides a street wall stepback of 10 feet at 45 feet. The LRC building provides a street wall stepback of 13.5 feet at 51 feet. No further action is required.	Met.

Building Length	Overview: The learning & research center has a current length of 244 feet, which does not necessitate a continuous, publicly accessible corridor. The Applicant has indicated that the center is intended to have an addition at a later phase of development that would necessitate a continuous, publicly accessible corridor. Based on the current design, the space identified as Gather Portal Auditorium Multi-Purpose mostly meets the corridor requirements providing visual interest between both ends of the corridor, including informal seating, and adequate lighting. However, while the majority of the corridor is>30 feet in height, there is a 21-foot-long segment along the Western entrance that only has a 17-foot height. The proposed Structured parking & preschool facility building includes a building length is less than 250 feet, which complies with the building length requirements. City staff encourages the consideration of an alternate design (e.g., Incorporating the preschool facility within the footprint of the structured parking area, shifting the preschool facility to the eastern façade of the building).	Met.
Transitions and buffers	Overview: The shoreline transition space connects occupants of the three buildings to the water and includes a variety of passive and active recreational facilities. Proposed building heights within the buffer areas along the perimeter of the site comply with the maximum permitted heights of 75 feet. The western façade of the Structured parking & preschool facility building serves as a transition area onto the site that should correspond to thoughtful pedestrian-scale design and screening of nuisance features, such as parking. Currently, the 1st-3rd levels of the structured parking are not screened and do not positively contribute to the thoughtful pedestrian-scale design. Updates Requested • Update architectural drawings to include screening of all structured parking levels on the western façade.	Not Met.
Transportation (§8.5.7(E))		
Standard	***Discussion***	***Finding***
Transportation Demand Management	Overview: §8.5.7(E)(1)(a) requires that a campus-wide TDM Plan be submitted at the time of the first site plan review. The submitted TDM plan only accounts for the first phase of development. Updates Requested • Update the TDM plan to establish a framework for all envisioned phases of development, including a data collection plan. Staff encourages establishing a plan differentiating parking passes by types of garage users (e.g., Staff vs. student; resident vs. hotel guest vs. off-site visitor), as well as installing permanent bicycle & pedestrian counters at planned & potential shared-use entrances to the site.	Not Met.

Traffic Movement Permit	Overview: Comments on the Traffic Movement Permit (TMP) application are provided in Attachment 3. Continuing comments will be provided as the review of the TMP continues. Updates Requested • Update the application to provide materials requested in Attachment 3 and continue to coordinate with MaineDOT & City staff for future comments & requested revisions.	Not Met.
Bicycle and pedestrian access and safety	Overview: There are multiple figures within the application materials that address the circulation for cyclists and pedestrians, but are not identified as a Transportation, Access, and Circulation Plan. During the first site plan review, an updated Transportation, Access, and Circulation Plan is required to be submitted. Comments provided by Transportation Program Manager Bruce Hyman identify improvements to and from the site to ensure safe connections that relate to projected City shared-use facilities on Veranda Street. Submitted floor plans for the Structured parking & preschool facility building should be updated to clarify connections between uses in the building, as well as ingress/egress points for pedestrians. Given the proposed frequency and volume of pedestrian & bicycle trips on the site, City staff are recommending that the perimeter access loop have a minimum width of 20 feet and that all other on-site pedestrian facilities should have a minimum width of 12 feet. As part of enabling easy connections for cyclists to existing and prospective bicycle facilities, the continuation of a shared-use facility on the northern portion of the site should be provided to Sherwood Street. Updates Requested • Submit an updated Transportation, Access, and Circulation Plan as a separate document to include pedestrian facilities, as well as contemplated connection points to the rail trail and Tukey's Bridge. Contemplate connections can be differentiated with a dashed line and for Tukey's Bridge, do not need to provide a finalized alignment. • Update application materials to address comments from Bruce Hyman regarding the proposed design of Sherwood Street. • Update floor plans for the Structured parking & preschool facility building to provide additional detail on interior connections between building uses, and ingress/egress points for pedestrians. • Update the application to include a minimum perimeter access loop width of 20 feet and a minimum 12-foot width for all other pedestrian facilities.	Not Met.

Parking	Overview: The application has included a parking analysis in the TDM plan stating that the TMP anticipates a parking demand of 881 spaces in 2032. Preliminary strategies to diversify mode share and decrease parking demand have been referenced in the TDM plan and will need additional clarification as part of the development of the TDM plan. As part of each site plan phase, a parking ratio will need to be established. In the submitted application materials, a parking ratio has not been provided. Further, it is unclear where the anticipated parking demand figure of 881 spaces in 2032 is in the TMP application.	Not Met.
	Updates Requested • Updated application materials to include a parking ratio based on the parking analysis. • Identify where the estimated parking demand of 881 spaces for 2032 is in the TMP application.	
Circulation	Overview: The site plan includes a circulation network that includes a perimeter access loop, internal pedestrian pathways, and a promenade that help define development blocks, enhance the relationship with the built and natural environment, and include a combination of lighting, wayfinding, buffers, and open space. As mentioned in comments from Transportation Program Manager Bruce Hyman, the edge of the perimeter access loop to the north and west is listed as a multi-use path in the circulation plan, but is a combination of separate pedestrian and bicycle facilities.	Not Met.
	Updates Requested • Update the application to include at least a 20-foot wide shared-use path for the entirety of the perimeter access loop.	
Environment (§8.5.7(F))		
Standard	***Discussion***	***Finding***
Open Space	Overview: Figure 3-18 identifies the proposed public open space for this phase, but does not provide an accompanying amount of acreage or a draft public access easement for the access loop for review by the Planning Board and Corporation Counsel.	Not Met.
	Updates Requested • Submit a site plan sheet that shows the proposed public open space with the total amount of open space (in acreage). • Submit a draft public access easement for the perimeter access loop and buffer around the loop for review by the Planning Board and Corporation Counsel.	
Sustainability and Resilience Charter	Overview: A Sustainability and Resilience Charter was submitted before the submission of the site plan application, including standards on energy, water, transportation, equity, and resilience.	Not Met.

	The separate Design Development document indicates that the charter is aligning with some of the elements from LEED standards. City staff has reviewed the charter and in Attachment 4 identified missing/unclear information to ensure that the submitted application is consistent with the goals outlined in the Charter. **Updates Requested** • Update application materials to respond to the comments in Attachment 4.	
Lighting	**Overview:** The Applicant has submitted interior lighting plans for the Learning, Research, and Collaboration building, exterior lighting, and rooftop lighting for the Structured parking & preschool facility building. Upon review, the designs comply with ANSI/ASHRAE/IES Standard 90.1-2022. Submission of interior lighting for the Cannery Building and the Structured parking & preschool facility building will be required to confirm compliance with ANSI/ASHRAE/IES Standard 90.1-2022. **Updates Requested** • Submit interior lighting plans, sequence of operations, and control details for the Cannery Building and the Structured parking & preschool facility building will be required to confirm compliance with ANSI/ASHRAE/IES Standard 90.1-2022.	Not Met.
Design Flood Elevation (DFE)	**Overview:** The proposed finished floor elevation (FFE) of the Learning, Research, and Collaboration building is 22.5 feet while the proposed grade for the lowest point of the building is 19.5 feet, which exceeds the 2-foot above base flood elevation (BFE) requirement. The Cannery Building proposes an FFE of 12.79, with a BFE of 9 feet, which exceeds the 2-foot above base flood elevation requirement. Staff are requesting the FFE for the preschool facility to confirm that it is equal to or greater than 2 feet above base flood elevation. **Updates Requested** • Submit the FFE for the preschool facility.	Not met.
Shoreline Stabilization & Natural Resource Impacts	**Overview:** Given the high-wave action along the shoreline of the property, the Applicant has proposed rip rap armoring since many living shorelines are better suited for lower-wave activity. City staff encourage the use of vegetative breakwater solutions, such as an oyster breakwater reef, in concert with the rip rap to decrease tidal action and promote habitat stability. Work within wetlands and significant wildlife habitats is still currently under review through multiple entities and based on these review processes, this section will be updated accordingly.	No action required at this time.

Bird-Safe Design	Overview: Site lighting is proposed to be cut-off and down-lit to minimize the potential of bird collisions. The Learning, Research, and Collaboration building uses a combination of frit/acid etch glass products that are identified as bird-safe, but will need to be confirmed at the time of building permit. Laminated glass fins identified as GL-C1 (WT-C1) are proposed for a significant portion of the lower floors of the building, but are not identified as having a bird-safe treatment or design. Some detail specifications have been provided for the proposed Cannery Building windows, but materials do not clarify whether the windows will have finishes/film/etc., to ensure bird safety. No detail specifications have been provided for the glass proposed for the Structured parking & preschool facility building. Updates Requested • Update architectural drawings for the Learning and Research Center to clarify how the proposed laminated glass fins identified as GL-C1 will include a bird-safe treatment/design with American Bird Conservancy and Cornell Ornithology Lab standards. • Submit updated detail drawings for the proposed new windows in the Cannery building to demonstrate that the windows or additional treatment to the windows will provide a bird-safe design with American Bird Conservancy and Cornell Ornithology Lab standards. • Submit detail drawings for the proposed windows for the Structured parking & preschool facility building that demonstrate a bird-safe design with American Bird Conservancy and Cornell Ornithology Lab standards.	Not Met.
Mitigation Measures (§8.5.7(G))		
Standard	***Discussion***	***Finding***
Off-Site Infrastructure	Overview: Mitigation for off-site infrastructure will continue to be assessed through the review of the site plan & TMP applications. An assessment of the proportionality of mitigation measures will be assessed later on in the review process to account for data collection and analysis conducted as part of the TMP, as well as any other applicable impacts identified by City reviewers.	No action required at this time.
Natural Resources	Overview: Mitigation for natural resources will continue to be assessed through the review of the site plan & TMP applications. An assessment of the proportionality of mitigation measures will be assessed later on based on feedback from local, state, and federal reviewers.	No action required at this time.

Design (§8.5.7(H))		
Standard	***Discussion***	***Finding***
Waterfront	Overview: The Applicant has proposed three acres of permanent publicly accessible open space within the Phase 1 development plan, to include waterfront recreational space and a network of bicycle/pedestrian pathways. Staff finds the network of paved pathways at the perimeter of the site allows for public access to the waterfront, the Applicant proposes access to the water's edge, viewing destinations with seating, bike storage, and other publicly accessible social gathering spaces that Staff finds appropriate. The Applicant has proposed a curved principal structure, functioning as the Academic (Learning, Research and Collaboration) Building, that responds to the coastal edge and allows for a publicly accessible entrance at the waterfront facade. Staff finds the waterfront facing façade material of the Academic Building welcomes ground-level glazing to indicate a publicly accessible corridor in addition to a social gathering defined with unique paving material, landscape areas, and seating opportunities. Staff observes Vestibule 3 (LS10.01) as the primary public entrance at the waterfront-facing facades, which the Applicant should include a detailed elevation for Staff review.	Not met.
	Updates Requested • Submit a detailed elevation for Vestibule 3 for further Staff review.	
Cohesive Campus	Overview: The Applicant's Phase 1 submission is consistent with the Roux Institutional Development Plan (IDP) and incorporates a composition of new structures of transitional heights to create an overall campus identity.	Met.
Historic preservation	Overview: Staff requests the Applicant address the intended function of the radius paved surface leading to the western façade of the Cannery Building, and to clarify if ancillary, delivery, or utility functions are proposed in this area.	Not met.
	Updates Requested • Submit clarification on the intended function/s of the radius paved surface leading to the western façade of the Cannery Building, including, but not limited to, any ancillary, delivery, or utility functions.	
Connectivity	Overview: The Applicant has proposed a circulation network for Phase 1 that is consistent with the approved IDP that emphasizes pedestrian connectivity and limits personal vehicles to the peripheries. The Applicant has proposed material selections for asphalt paving and granite cobblestone pavers as vehicular along the coastal path, Staff is requesting the Applicant provide a written description of the intended use along the coastal path. Staff will review the appropriateness of vehicular use along the coastal path and potential maintenance operations around the perimeter of new and existing structures.	Not met.

	The Applicant has submitted the Parking Structure plans to proposed multiple garage entrances along the north and east facades, Staff is recommending the Applicant address why the vehicular program requires multiple garage entrances. Staff recommends a reduction of garage entrances for vehicles to the north facade to reduce vehicles within the core of the campus and if possible limit vehicles only to drop-off locations.	
	Updates Requested • Submit a written description of uses along the coastal path in relation to motorized vehicles. • Submit a narrative discussing the need for multiple garage entrances.	
Open space	Overview: The proposed landscape areas transition varies property edges and open space program, Staff recommends a landscape palette at the waterfront edge with specific native coastal shrubs and grasses palette to mitigate the occasional inundation of coastal flooding and salt spray. Staff finds the organization of site materials to include retaining walls, seating elements, paving materials, and amenities to unify the site design with multiple opportunities for public engagement.	Not met.
	Updates Requested • Update the landscape plan to include native coastal shrubs and grasses along the waterfront edge.	
Sustainable practice	Overview: The Applicant should indicate on plan submission whether there will be PV panels during Phase 1 for the Structured parking building & preschool facility on the rooftop level.	Not met.
	Updates Requested • Confirm whether photovoltaic panels will be installed as part of Phase 1 for the Structured parking & preschool facility building.	
Resilience	Overview: The submitted design includes several resilient design choices for the proposed buildings and includes several publicly accessible spaces that are out of the floodplain for the site. Outstanding resiliency items from the sustainability charter should be addressed as part of updated application materials. While information was provided on generators for the LRC building and Cannery Building, clarification should be provided on whether a generator(s) will be included for the Structured parking & preschool facility building and if not how emergency power generation & elevator egress will be provided for the building.	Not met.
	Updates Requested • Confirm whether a generator(s) will be included for the Structured parking & preschool facility building. If not, submit a narrative on how emergency power generation & elevator egress will be supplied.	

Building design	Overview: The Applicant's submission for the Parking Structure includes a preschool facility at the south façade with an associated outdoor play space. Staff recommends that the Applicant provide revisions that address the location of the preschool facility that may integrate the facility within the east or south façade to create ground-floor activation at the Parking Structure, relocate as an independent structure/play space, or relocate as a building appendage connected with the stair tower along the east facade. Staff finds the metal screening reduces the negative visual impacts of the structural concrete parking garage and utilizes a consistent material in the type and color of the overall campus. The Applicant must submit architectural plans for the Childcare Facility to include the proposed FFE. The Applicant's submission for the Academic (LRC) Building includes a scaled massing with articulation along the first 35 feet through the organization of proposed materials with glass/aluminum curtainwall and stone, the upper floors include a transition of materials with glass, and aluminum panels and metal screening of the mechanical equipment that Staff finds appropriate. Planning Board and/or Staff may request physical samples for the proposed materials. Updates Requested • Submit architectural floor plans and proposed FFE for the preschool facility.	Not met.
Building entrances	Overview: The Applicant submission indicates several vestibules along the street wall east and west facing façades of the Academic (LRC) Building, Staff finds the location of these publicly accessible ground-level entrances difficult to distinguish from the proposed façade materials. This is particularly important at the interior campus-facing and waterfront façades, Staff recommends additional entrance articulation in addition to the Applicant's cantilevered curtainwall detail to assist as wayfinding for the publicly accessible entrances. Updates Requested • Update architectural drawings to include additional entrance articulation that supports wayfinding to publicly accessible entrances.	Not met.

Mitigation of impacts	Overview: Staff finds the Applicant submission for Phase 1 is consistent with the shadow impacts outlined in the approved IDP and submitted materials. The Applicant has designed the Phase 1 buildings in compliance with the IOZ Height Overlay Map and spacing of buildings 40 feet apart to reduce the impacts of wind. The Applicant has calculated allowable noise designed to not exceed city guidelines, Staff will review with further comments if required. Staff finds the arrangement of buildings, limited surface parking, and site programming to mitigate heat throughout the Phase 1 development plan. Planning Board and/or Staff may request the thermal comfort analysis study performed by the Applicant. Staff finds the implementation of building materials to include aluminum fins or "sails" to reduce glare significantly, along with the arrangement of glass panels in the concave facade. Planning Board and/or Staff may request the reflected solar irradiance study performed by the Applicant. Staff finds the Applicant submission for Phase 1 is universally consistent to include comfortable and safe lighting solutions. Staff finds the Applicant employs design strategies to mitigate environmental threats such as bird strikes, flooding, and locally sourced materials where possible.	No action required at this time.
Neighborhood integration (§8.5.7(I))		
Standard	***Discussion***	***Finding***
Neighborhood engagement	Overview: The IDP and regulatory framework require the creation and maintenance of a project website, the creation of a community advisory group with quarterly meetings, and quarterly neighborhood forums. Four neighborhood forums have been held on February 28th, April 27th, June 29th, and October 18th, with videos and meeting notes posted to the project website. In the October 18th neighborhood forum meeting notes, October 30th was identified as a tentative meeting date for the community advisory group. Confirmation of that meeting and the members of the advisory group shall be submitted to City staff. As part of the project website's function as a repository for project information, identification of the designated community contact should be added to the project website and existing content should be reviewed to ensure that information is up to date.	Not Met.
	Updates Requested • Submit the October 30th Community Advisory Group meeting minutes, including a complete list of Advisory Group members (present and not present) and a summary of discussion topics.	

	• Provide confirmation of who is serving as the designated community contact. City staff recommends that the community contact be identified on the project website along with the contact email provided at the bottom of each page. • In keeping with the goal of the IDP to provide up-to-date information through the project website, review and update accordingly the timeline listed under the Info page of the project website.	
Construction management	Overview: The submitted Construction Management Plan provides an overview of communication strategies, site maintenance, relevant City permits, and erosion & sediment controls. Additional information is requested to confirm compliance with the IDP and for referenced documents that have not been submitted yet.	Not Met.
	Updates Requested • Submit a draft design for a dedicated construction webpage that includes communication methods through social media, texting, and hotline • A detailed construction schedule is referenced but is not attached to the Construction Management Plan. Submit a detailed construction schedule for City staff review. • Submit a truck routing plan that identifies routes to and from the site, along with anticipated hours for deliveries. Temporary off-site storage locations should be identified as part of the truck routing plan. • Under Erosion Control and Preservation of Trees, clarify that temporary ESC measures shall be removed post-construction. • A wheel wash is included for the eastern construction entrance, but there is not a wheel wash for the southern entrance/ there is no connection for trucks to enter through the southern entrance and exit through the eastern entrance. Clarify what ESC controls are proposed for the southern entrance and if vehicular connections are proposed between the southern and eastern entrances. • On the Sitework/Foundation sheet of the Site Logistics Plan, the Codfish Building and Pier are identified to be demolished at a later date. However, the demolition of these elements is included in the site plan set. Clarify.	
Historic Preservation (§8.5.7(J))		
Standard	***Discussion***	***Finding***

Historic preservation review	Overview: Work on the Cannery Building and within a 25-foot radius around the Cannery Building is currently under review by the Historic Preservation Board. Any additional actions requested by the Historic Preservation Board and the City's Historic Preservation staff members will be relayed by the City's Historic Preservation staff.	No action required at this time.
Required interpretive elements	Overview: A review of interpretive elements within the footprint of the existing pier will happen with the Historic Preservation Board. Any additional actions requested by the Historic Preservation Board and the City's Historic Preservation staff members will be relayed by the City's Historic Preservation staff.	No action required at this time.

Site Plan Review Standards (Sec. 14.6)

Transportation Standards (Sec. 14.6.1)

Standard	Discussion	Finding
Impact on Surrounding Street Systems	Overview: The project is being reviewed under a Traffic Movement Permit (TMP) application to assess impacts on the surrounding street network and anticipated increases in traffic congestion. A scoping meeting was held on December 13th, with scoping meeting notes to be sent to the Applicant team by MaineDOT. Planning Staff and MaineDOT continue to review the TMP application and the ongoing review will better assess anticipated impacts and associated mitigation strategies. Updates Requested • Continue to update application materials in conjunction with comments and recommended mitigation strategies as part of the TMP review process.	No action at this time.
Access and Circulation	Overview: As mentioned above, the TMP review process is reviewing elements of the site access and circulation that will help inform future updates to the design of the site. Additional comments will come up as the TMP review process continues and as future public-private projects to enhance site connections are more clearly defined. Additional comments from the Department of Public Works (Attachment 3) have identified site improvements, such as continuing the 10-foot shared-use path from Sherwood Street and along the site frontage, revision to the proposed sidewalk widths to match the anticipated pedestrian use of the site, and consideration of a roundabout at the eastern site entrance. Updates Requested • Update application materials to satisfy comments provided in Attachment 3. • Continue to update application materials in conjunction with comments and recommended mitigation strategies as part of the TMP review process.	Not met.
Public Transit Access	Overview: The application proposes the construction of a transit shelter that connects to the public sidewalk system.	Met.
Parking	Overview: In Attachment 3, consulting traffic engineer Tom Errico has requested a parking demand analysis to support the proposed parking supply as part of both the TMP and site plan review process. Results from this demand analysis may result in further comments related to this section. Tom Errico has supported the submitted waiver for the size of the proposed parking spaces in the garage based on the anticipated low vehicle turnover. As part of the application process, a TDM plan is under review and the demand analysis will help inform updates to the TDM plan. Updates Requested: • Submit a parking demand analysis that provides evidence supporting the proposed parking supply. • As necessary, update the TDM plan for any changes resulting from the parking demand analysis.	Not met.

Transportation Demand Management	Overview: The project exceeds the thresholds for §14.6.1(E)(1)(b&c) of the Land Use Code and is required to submit a TDM plan. The submitted TDM plan has been reviewed by Transportation Program Manager Bruce Hyman, who has provided in-line comments in Attachment 3. Overall, comments primarily focus on seeking additional definition for the proposed strategies.	Not met.
	Updates Requested • Update TDM plan to satisfy comments in Attachment 3.	
Environmental Quality Standards (Sec. 14.6.2)		
Standard	***Discussion***	***Finding***
Preservation of Significant Natural Features	Overview: The site includes a coastal wetland, that encompasses a blue mussel habitat, a habitat for candidate endangered species (Monarch Butterfly, and a habitat for endangered species (Northern Long-eared Bat & Roseate Tern). No critical habitats have been identified within the project area. Tree clearance will occur between August and May to mitigate impacts on the northern long-eared bat to avoid migratory periods. Continuing assessment of impacts will occur through the review processes of the associated NRPA permit and Army Corps of Engineers General Permit. Identification of significant natural features will need to be included on one sheet (at a minimum), as part of the site plan set and the survey.	Not met.
	Updates Requested • Update the site plan set and survey to identify all significant natural features on and immediately adjacent to the site. Updates should specify the approximate boundaries of habitats of endangered species.	
Landscape Preservation	Overview: §4.3.1. of the Technical Manual requires projects to submit a tree survey from a licensed land surveyor arborist, forester, or landscape architect identifying the forest type and location, size, and species of all existing trees 10" DBH or greater on the site and in the right of way. A tree survey was not included as part of the application submission. City Arborist Mark Reiland has requested the submission of a tree survey meeting the standards of §4.3.1. of the Technical Manual. If trees are identified as being 10" DBH or greater, protection and incorporation of those trees shall be integrated into the landscape plan.	Not met.
	Updates Requested • Submit a tree survey for the site that meets the standards of §4.3.1. of the Technical Manual.	
Site Landscaping and Buffers	Overview: The site location being buffered by I-295, the rail line, and Casco Bay will sufficiently buffer the proposed site uses from the public right-of-way and neighboring properties. The site includes two surface parking lots, each with five parking spaces, and requires the planting of two trees in parking islands. Both surface parking areas provide more than two trees in the parking islands and meet parking lot landscaping requirements.	Not met.

	The site has 288.57 feet of street frontage and is required to plant one tree per 25-35 feet on center, or 8-12 street trees, within the public right-of-way. As submitted, no trees are proposed to be planted within the public right-of-way. §4.6.4 of the Technical Manual permits several street tree alternatives subject to the review of the City Arborist. Some potential alternatives to meet the requirement of 8-12 trees include the planting of new street trees within 20 feet of the property line, as well as plantings on public land in the same neighborhood. City Arborist Mark Reiland has stated in Attachment 3 that alternative species will need to be provided to the proposed Maple varieties, with five of the trees planted within 20 feet of the property frontage being Autumn Blaze Freeman Maples.	
	Updates Requested • Update application materials to provide 8-12 street trees within the City right-of-way or through an alternative strategy meeting the standards of §4.6.4. of the Technical Manual. If alternatives are proposed, alternative street tree planting strategies are subject to the review of the City Arborist and may require additional documentation for future preservation/evidence that proposed planting sites are unlikely to be redeveloped in the near future.	
Water Quality, Stormwater Management and Erosion Control	Overview: The stormwater management application materials were reviewed by third-party stormwater consultants Wright Pierce. Upon their review, the team requested application updates in Attachment 3. Overall, requested application updates focused on stormwater infrastructure on Sherwood Street, minor clarifications and updates on notes, and clarification of how the application is complying with Maine DEP standards.	Not Met.
	Updates Requested • Update the application to satisfy comments from Wright Pierce.	
Public Infrastructure and Community Safety Standards (Sec. 14.6.3)		
Standard	***Discussion***	***Finding***
Consistency with City Master Plans	Overview: Overall, the submitted application aligns with the goals of One Climate Future, through the inclusion of renewable energy infrastructure, goals to reduce single occupancy vehicle miles traveled through transit and shared-use connections & facilities, and sustainable development practices outlined in the Sustainability Charter.	Met.
Public Safety and Fire Prevention	The application has been reviewed by Captain Jason Grant of the Portland Fire Department, who has confirmed that the application provides sufficient access and infrastructure for the site. E-911 addresses will need to be created as part of the review process and should be coordinated with Charles Wordell (cww@portlandmaine.gov) at the Department of Public Works. As mentioned in the design comments in the Zoning worksheet, continuing updates to the site design of the western portion of the perimeter access loop will promote an enhanced experience for cyclists and pedestrians, and ensure greater cohesion. continued use as part of the larger campus.	Not met.
	Updates Requested • Email the Department of Public Works to begin the E-911 address process, with Zach Powell copied on the email. The applicant team shall work with the	

	Department of Public Works to identify any additional steps that need to be taken before site plan approval. • Update architectural drawings to demonstrate how the western portion of the perimeter access loop is actively integrated into the overall campus design and how the site design enhances the overall experience of using the perimeter access loop for cyclists and pedestrians.	
Public Utilities	Overview: The application includes copies of the ability to serve requests to applicable utilities. City Staff will await final approval from these utilities and will request copies of letters as conditions of approval or sooner, if feasible. Updates Requested • Submit ability to serve letters from utilities when available and provide any additional information requested by the Portland Water District, as requested.	No action at this time.
Site Design Standards (Sec. 14.6.4)		
Standard	***Discussion***	***Finding***
Massing, Ventilation and Wind Impact	Overview: The property abuts Maine DOT rights-of-way and Casco Bay, which does not result in ventilation impacts to abutting structures or a diminution in the value of neighboring structures. HVAC venting is directed upwards away from public spaces on-site and is not proximate to any residential properties.	Met.
Shadow	Overview: Shadow standards are not applicable in the B-5 zone.	Met.
Snow and Ice Loading	Overview: The proposed building designs are not located close enough to Sherwood Street or lot lines with adjacent properties to result in significant ice/snow loading/accumulation.	Met.
View Corridors	Overview: The site is not located along a public view corridor identified in the *Downtown Vision View Corridor Protection Plan*.	Met.
Historic Resources	Overview: The project site includes a locally designated landmark (The Cannery Building and a 25-foot radius surrounding the building). Building and site improvements are currently under review by the Historic Preservation Board and comments will be provided by the Historic Preservation Board and Historic Preservation Staff. §8.5.7(J)(3) of the Land Use Code exempts the project from the 100-foot review for the Cannery Building. Under §8.5.7(J)(2) of the Land Use Code, the Historic Preservation Board will review and approve proposed interpretative elements of the reconstructed pier, but not the demolition of the Codfish Building and current pier, construction of a new pier, or related infrastructure. Historic Preservation Staff have requested additional information related to the interpretive elements of the reconstructed pier. Action Requested • Submit an updated copy of the site plan set that shows the limits of the designation boundary. • Update application materials to satisfy Board and Staff comments from the December 6, 2023 Historic Preservation Board Meeting. • Await comments from the Historic Preservation Board and Historic Preservation Staff.	Not met.

Exterior Lighting	Overview: One residential (Local/Minor) street light is required to be installed per 120 feet of street frontage and meet the requirements of §10.2. and Figure X-1 of the City's Technical Manual. The site has ~166 feet of frontage along Sherwood Street and would require the installation of two street lights. The submitted application proposes the installation of three light fixtures along the right-of-way at mounting heights of 20' and unspecified CCT that do not comply with §10.2 and Figure X-1 of the City's Technical Manual. Site lighting does not comply with the following standards: • Uniformity: 20:1 (24.5 proposed) • Average Illumination at grade: 1.25 (1.78 proposed) • Average Illumination (Surface Parking Lot near LRC): 2.15 (0.5 required) • Uniformity Ratio (Surface Parking Lot near LRC): 2.9:2.1 (3:1 required) • Average Illumination (Surface Parking near Structured Parking: 1.54 (0.5 required) • Uniformity Ratio (Surface Parking near Structured Parking): 2.1:1.3 (3:1 required) • Maximum Lumens (Path lighting): 5,332 (1,500 maximum permitted) (Applies to E01A and E02a fixtures along pathways) Assessment of average illumination, uniformity ratio, and maximum illuminance was provided for the roof of the Structured parking & preschool facility building when measurements were required to be assessed at ground level.	Not Met.
	Updates Requested • Update the application to include two street lights that meet the standards of §10.2 and Figure X-1 of the City's Technical Manual or seek waivers. • Update application to have site lighting meet the standards of §12.3 of the Technical Manual • Update photometric plans to provide average illumination, uniformity ratio, and maximum illuminance at ground level around the Structured parking & preschool facility building. • Confirm the CCT that will be used for each proposed luminaire. • Add information on luminaire E11 to the Luminaire Schedule table.	
Noise and Vibration	Overview: Mechanical equipment is located interior to the roofs of proposed buildings & the site. Equipment is also not proximate to residential properties.	Met.
Signage and Wayfinding	Overview: The proposed monument signage for the campus includes a variety of typologies with a unified design. Given that none of the building signage is proposed to be building mounted, signage will not conceal architectural features, and the proportionality of the signage to a building façade, and attachment to rooftop appurtenances is not applicable. Signage is sufficiently setback from Sherwood Street and access drives do not adversely affect visibility. All proposed lighting associated with signage is internally illuminated.	Met.
Design Standards	Overview: Please refer to Roux IOZ design comments in the Zoning worksheet.	Not Met.

WRIGHT-PIERCE
Engineering a Better Environment

Memorandum

Date: 12/22/2023

Project No.: 21697A

To: Zach Powell, AICP, City of Portland Planner

From: Jaime Wallace, PE, Wright-Pierce
Brooke Springer, EI, Wright-Pierce

Subject: Major Site Plan – Northeastern University's Roux Institute Phase 1 (PL-002724-2023)

Wright-Pierce has performed a stormwater review of the Major Site Plan application to develop Phase 1 of the Roux Institute at Northeastern University's campus located at 1 Beanpot Circle on the Portland Waterfront (PL-002724-2023).

Documents Reviewed by Wright-Pierce

- Project Plans:
  - Average Grade Plan Set developed by CambridgeSeven consisting of sheets AS61.01 through AS61.03 dated October 27, 2023.
  - Civil Plans developed by CambridgeSeven and Woodard & Curran consisting of sheets G-000, G-001, C-001, C-002, C-101, C-102, C-201, C-202, C-301 through C-304, and D-401 through D-407 dated October 27, 2023.
  - Landscape Plans developed by Cambridge Seven consisting of sheets L3.00, L3.01, L3.10, L4.00, L4.01, L4.02, L5.00, L6.00 through L6.03, and L8.00 dated October 27, 2023.
  - Sherwood Street Plans developed by VHB consisting of sheets 1 through 16 dated November 1, 2023.
  - Existing Conditions Survey developed by VHB consisting of sheets Sv-1 through Sv-3 dated September 15, 2023.
- Application Documents
  - Major Site Plan Application documents developed by Woodard Curran consisting of sections 1 through 9 dated November 2023.
  - Construction Management Plan developed by Consigli updated September 14, 2023.
  - Site Location of Development Application developed by Woodard & Curran dated November 2023.
  - Stormwater Management Plan developed by Woodard & Curran dated October 2023.
  - Waiver Table developed by Woodard & Curran.

Comments:

It is our understanding that the site plan and associated documents have been previously reviewed by the City of Portland Water Resources Division and Portland Water District. The following comments provided by Wright-Pierce focus on the stormwater infrastructure on site with respect to the City of Portland Technical Manual and Maine DEP Chapter 500 and Best Management Practices.

1. **Maine DEP Chapter 500 Review:**
   The applicant has provided a narrative report in support of a Site Location of Development (SLOD) permit application. The following comments are related to review of this SLOD report and associated plan details.

a. Urban Impaired Stream Standard
    i. As noted by the applicant, the proposed development is not located within an urban impaired stream watershed. Therefore, this standard is not applicable.
b. Basic Standard
    i. On Sheet C-002 of the Civil Plans, it appears the perimeter barrier falls within the edge of water called out on the plans. It is recommended to relocate the perimeter barrier to keep it out of the water.
    ii. On Sheet C-002 Inset B of the Civil Plans, it appears the perimeter barrier crosses an existing building. Please confirm and revise as necessary.
    iii. On Sheet D-401 of the Civil Plans, trench and foundation de-watering is discussed. Please confirm whether dewatering is anticipated on this project. If dewatering is anticipated, please consider including a detail for de-watering treatment in the plans and discussion on proper discharge in the Stormwater Management Plan.
    iv. In Appendix B (Inspection and Maintenance) of Maine DEP Chapter 500 it is noted that during post-construction ditches and swales should be inspected after heavy rains in addition to in the spring and late fall. We would recommend including this additional inspection requirement in the Stormwater Inspection & Maintenance Plan.
    v. Sheet D-401 of the Civil Plans notes Winter Construction is between November 1 and April 1 and that areas must be stabilized by November 15 or winter stabilization methods will be required. However, in Appendix A.7 of Maine DEP Chapter 500 it is noted that Winter Construction is between November 1 and April 15 and that areas must be stabilized by November 1 or winter stabilization methods will be required. We recommend the applicant update the dates in the Civil Plans to match Maine DEP requirements.
    vi. If winter construction is anticipated, we would recommend including Winter Construction requirements outlined in Maine DEP Chapter 500 in the Stormwater Water Management Plan.
c. General Standard
    i. The applicant has demonstrated that they meet the treatment requirements for a redevelopment project under the General Standards of Maine DEP Chapter 500. Based on the pollutant ranking calculations provided in the Stormwater Management Plan, the proposed development is required to treat 50% of the proposed developed area. The applicant provided a treatment summary indicating that they are treating more than 50% of the developed area.
    ii. In Appendix B of the Stormwater Management Plan, the applicant provides sediment pre-treatment calculations for the bio-retention filters and R-Tank systems. The pre-treatment calculations for the bio-retention filters appear to meet the minimum requirements based on Chapter 7.2. However, the pre-treatment calculations for the R-Tank system do not use the calculations provided under Appendix B of the BMP manual for R-Tank. We would recommend the applicant confirm that proposed pre-treatment meets the requirement of proprietary systems under Appendix B of the Maine DEP BMP manual.
d. Flooding Standard
    i. The applicant states in the Stormwater Management Plan that the portion of the project which discharges to Casco Bay is eligible for a waiver under Maine DEP Chapter 500 Section 4.F(3) since it is discharging to a tidal waterbody. The drainage within Sherwood

Street will not drain to Casco Bay, however, the applicant is requesting a waiver from the Flooding Standard for the campus development.

2. General Comments
    a. Section 25 of the Site Location of Development Application states that "public notice requirements associated with MaineDEP Site Law do not apply" because the "City of Portland has Delegated Review Authority." However, in the Maine DEP Site Location of Development Permit Application Form C it states that applicants shall "provide public notice for all Site Location projects with the exception of minor revisions and condition compliance applications." Please confirm public notices will not be required for this application.
    b. In Chapter 7.2 Bioretention Filters of Volume III. BMP Technical Design Manual, it is stated that the "geotextile fabric should be Mirafi 170N or equivalent." On Sheet D-407 of the Civil Plans, the filter fabric is called out as 140N. We recommend the applicant confirm that 140N is acceptable for this application.

3. Stormwater Management Plan
    a. It is stated in Section 3 of the Stormwater Management Plan that stormwater infrastructure on Sherwood Street is still being resolved. Please provide updated stormwater plans for Sherwood Street once completed.
    b. We would recommend the applicant provide stormwater modeling results to confirm bioretention ponds and R-Tank systems meet the requirements of Maine DEP Stormwater BMP Manual.
    c. In Section 32-38 City of Portland's Code of Ordinance, it is noted the City requires an annual inspection report completed by a qualified post-construction stormwater inspector to be submitted to the Department of Public Works. It is recommended to include this requirement in the Stormwater Inspection & Maintenance Plan.

4. Plan Comments
    a. On the Sand Filter details on sheet D-405, there is a callout for "underdrain to outlet structure (size, location, and length to be determined by Engineer of Record)." On sheet C-302 the underdrains for the sand filters are shown discharging to daylight and not to a structure. Please confirm intent of detail and revise as appropriate.
    b. On sheet C-304, one of the structure tables is cut off and appears to be missing OCS-9. Please provide an updated table showing all OCS information.
    c. Information for SD103 should be provided on Sheet C-304 in the pipe table.
    d. On sheets C-301 and C-302, hydrodynamic separators are shown for Subsurface Sand Filter 1 (HDS1) and Subsurface Sand Filter 3 (HDS2). It is stated in the MaineDEP R-Tank Approval Letter, "If the area draining to the pre-treatment structure is a source of hydrocarbons or debris (i.e. parking lots, roads, drive-through commercial enterprises), the pretreatment structure must be preceded by a practice that will trap these products." It appears Subsurface Sand Filter 4 collects drainage from the road through CB14. Please verify if a hydrodynamic separator is required for Subsurface Sand Filter 4.
    e. We would recommend adding a detail for pipe insulation of shallow pipes.
    f. We would recommend adding a detail that shows horizontal and vertical utility separation requirements.
    g. On sheet L4.00, consider outlining bioretention cell location as it relates to the proposed vegetation. Confirm native shrubs and perennials are located within the bioretention area, per Maine DEP – Chapter 7.2 – Bioretention Filters.

Zachary Powell <zpowell@portlandmaine.gov>

Roux Institute - Initial Traffic Review Comments

Tom Errico <thomas.errico@tylin.com> Wed, Dec 13, 2023 at 12:23 PM
To: "zpowell@portlandmaine.gov" <zpowell@portlandmaine.gov>
Cc: Janine Ba <janineba@portlandmaine.gov>, Bruce Hyman <bhyman@portlandmaine.gov>, Keith Gray <kgray@portlandmaine.gov>

Hi Zack – I have reviewed the application materials and have the following initial comments.

- The project requires a Traffic Movement Permit. The MaineDOT is administering the Traffic Movement Permit and is holding a Traffic Scoping Meeting on December 13, 2023. I will provide comments upon receipt of the traffic study.
- The applicant shall provide the parking demand analysis back up information in support of the projects parking supply.
- The applicant shall provide sight distance measurements at the Veranda Street/Sherwood Street intersection.
- The alignment/configuration of the internal three-way STOP intersection is a concern given the heaviest egress traffic movement will have to make a hard left maneuver. I would be interested in the evaluation of a small roundabout at this location.
- I support a waiver for the size of parking spaces in the garage given low vehicle turnover.
- There has been discussion of a direct ramp connection from Exit 8 of I295 into the site. If deemed appropriate through the TMP process, it would be helpful to see how this connection would be integrated into the existing site plan.

Please contact me if you have any questions.

Best regards,

Tom Errico, P.E.
NE TRAFFIC ENG. DIRECTOR
T +1 207.347.4354
M +1 207.400.0719
thomas.errico@tylin.com

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Building A, Suite One
Falmouth, ME 04105, United States

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Zachary Powell <zpowell@portlandmaine.gov>

PL-002724-2023 1 Bean Pot Circle/Roux Ph. 1 DPW Comments

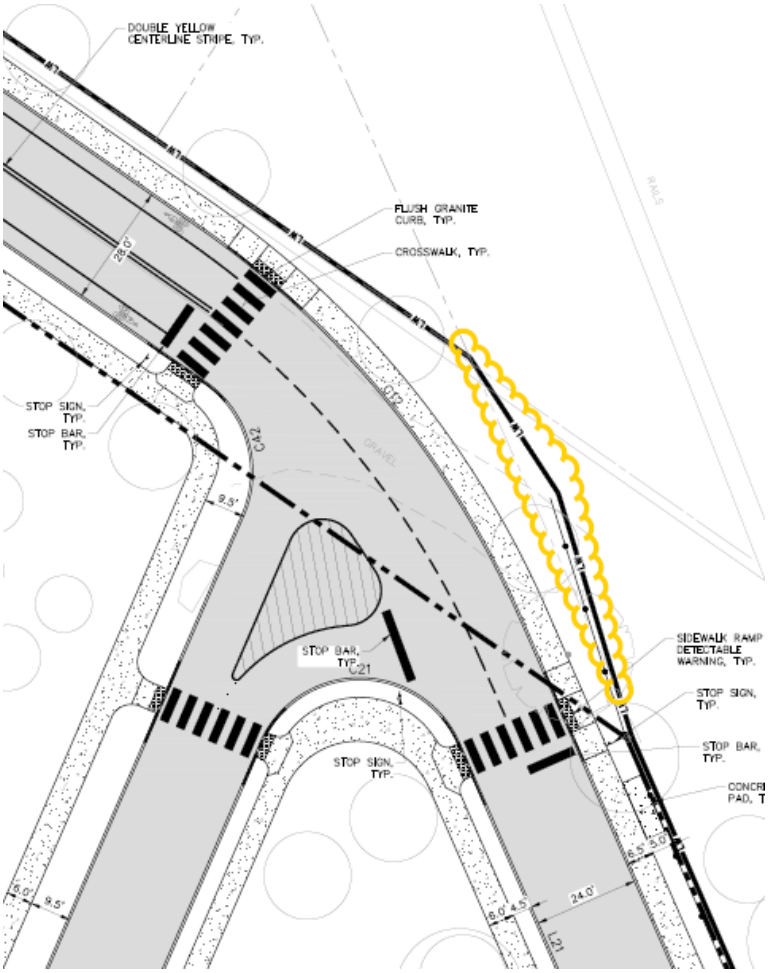
Janine Ba <janineba@portlandmaine.gov> Fri, Dec 15, 2023 at 3:25 PM
To: Zachary Powell <zpowell@portlandmaine.gov>
Cc: Keith Gray <kgray@portlandmaine.gov>, Justin Pellerin <jrp@portlandmaine.gov>, Benjamin Pearson <bnp@portlandmaine.gov>, Lauren Swett <lswett@woodardcurran.com>, Tom Errico <thomas.errico@tylin.com>, Bruce Hyman <bhyman@portlandmaine.gov>

Zachary,

Below are DPW's comments for PL-002724-2023 1 Bean Pot Circle/Roux Ph. 1. Let me know if you have any questions.

PL-002724-2023
1 Bean Pot Circle/Roux Ph. 1
DPW Development Review Comments
12/15/2023

- DPW Transportation
  - DPW agrees with the proposed cross sections provided by the Transportation Program Manager for Sherwood Street that includes a 10’ shared use path and feel it should be continued onto the campus and transition at the intersection.
  - The applicant shall label the roadway (Sherwood Street) ROW and centerline on the plan view and cross section sheets.
  - When printed it can be hard to distinguish between existing and proposed elevation. All elevations in the plan set need to be labeled as existing or proposed to prevent confusion. Update the plan set by using EX. or parentheses () to distinguish between the type of elevation.
  - DPW feels a traffic circle would work better at the intersection pictured below.



- DPW has concerns with the minimum 5ft sidewalk width proposed for the site. The sidewalk width should be sized to meet the pedestrian demand for the campus.
- The **-LW-** limits of work must remain within the applicant's property (see picture above for example). Revise the plans to adjust the **-LW-** within the property or provide documentation that shows the applicant has permission to be on the property.

--
Janine Ba
Project Engineer
City of Portland Department of Public Works
212 Canco Rd. Suite B
Portland, ME 04103
janineba@portlandmaine.gov
Desk: 207-874-8463
Cell: 207-245-2074

Zachary Powell <zpowell@portlandmaine.gov>

Reminder – 1 Bean Pot Circle (PL-002724-2023) Comments due tomorrow

Mark Reiland <mreiland@portlandmaine.gov> Fri, Dec 15, 2023 at 3:57 PM
To: Zachary Powell <zpowell@portlandmaine.gov>

Hi Zach,
Here are my comments, I thought I sent them the other day but must have got sidetracked, sorry about that:

1 Bean Pot Circle

- Please include location, species, and DBH of existing trees on site and indicate tree protection measures for existing trees to be preserved
  - Groups of trees or wooded to be preserved can be indicated by showing the location of the collective group canopy dripline
- Please choose alternative species for the proposed maple selections:
  - Silver Maple, Red Maple, Sugar Maple, and Freeman Maple
    - The urban forest in the greater Portland area is over saturated with maple (>30% by count) creating a high degree of susceptibility to Asian Longhorned Beetle infestation

Mark Reiland
City Arborist

City of Portland, Maine

212 Canco Road - Suite A
Portland, ME 04103

[Quoted text hidden]

Zachary Powell <zpowell@portlandmaine.gov>

Reminder – 1 Bean Pot Circle (PL-002724-2023) Comments due tomorrow

Jason Grant <jgrant@portlandmaine.gov> Tue, Dec 19, 2023 at 8:22 AM
To: Zachary Powell <zpowell@portlandmaine.gov>

Thanks for checking Zach. I did not have any comments as we have been working with the developer behind the scenes and they incorporated our suggestions already.

Jason Grant CFI-2, CFPE
Fire Marshal / Fire Prevention Coordinator
Portland Fire Prevention Bureau
fireprevention@portlandmaine.gov

[Quoted text hidden]

PRELIMINARY COMMENTS (12/5/23)
ADDITIONAL COMMENTS MAY BE MADE AS SITE PLAN REVIEW AND TRAFFIC MOVEMENT PERMIT REVIEW PROGRESSES



The Roux Institute at Northeastern University

Transportation Demand Management Plan

PREPARED FOR

Roux Institute at Northeastern University / IDEALS
100 Commercial Street
Portland, ME 04101

PREPARED BY

500 Southborough Drive
Suite 105B
South Portland, ME 04106
207.889.3150

NOVEMBER 2023

Table of Contents

1 Introduction 1

1.1 Program Summary and Project Status 1
1.1.1 Existing Conditions 2
1.1.2 Proposed Development Program 2

2 Mobility Context 4

2.1 Vehicular Access and Circulation 6
2.2 Walking and the Pedestrian Environment 6
2.2.1 Existing Conditions 6
2.2.2 Future Commitment 6
2.2.3 Potential Future MaineDOT Infrastructure 6
2.3 Bicycling Environment and Facilities 7
2.3.1 Existing Conditions 7
2.3.2 Future Commitment 8
2.3.3 Potential Future MaineDOT Infrastructure 8
2.3.4 Other Potential Future Infrastructure 8
2.4 Public Transit 10
2.4.1 Existing Conditions 10
2.4.2 Future Opportunities 11
2.5 Ride-Hailing 12
2.6 Current Parking Policies 12
2.7 Existing TDM Efforts 12

3 TDM Coordinator 14

4 Baseline TDM Data 16

4.1 Modal Split 16
4.1.1 Roux Institute at Northeastern University Transportation Survey 16
4.1.2 Traffic Movement Permit Mode Split Data 17
4.2 Trip Generation 17
4.3 Proposed Parking Supply/Demand 18

5 TDM Mode Split Targets 19

6 Mode Split Target Strategies 20

7 Monitoring and Reporting Plan 23

List of Tables

Table No.	Description	Page
Table 1	Development Program	2
Table 2	Transportation Survey Mode Split Data	17
Table 3	TMP Mode Split	17
Table 4	Trip Generation	18
Table 5	Drive Mode Split Targets	19
Table 6	TDM Strategies - Commitments	21

List of Figures

Figure No.	Description	Page
Figure 1	Proposed Site Plan	3
Figure 2	Campus Transportation Access	5
Figure 3	15 Minute Bike Shed Zone	7
Figure 4	Existing and Potential Future Bicycle Facilities	9
Figure 5	Public Transit Access	11

1

Introduction

Pursuant to Section 17.3 of the City of Portland Technical Manual, the Roux Institute at Northeastern University's Transportation Demand Management Plan (TDM) provides a cohesive approach to establish a targeted set of strategies aimed at reducing single occupancy vehicle trips to and from the proposed campus in Portland, Maine. The TDM plan describes how the Roux Institute at Northeastern University will provide information and education, enhance alternative transportation infrastrucutre and mobility, and incentivize students, faculty, and staff so that they use more sustainable, multimodal commuting options such as walking, bicycling, transit, carpooling and telecommuting. The Roux Institute at Northeastern University is committed to ongoing annual surveying to monitor the implementation and succcess of the TDM plan.

1.1 Program Summary and Project Status

In 2020, the Roux Institute at Northeastern University was launched to build expertise at the intersection of humans and technology. The campus is currently temporarily operating at 100 Fore Street but will be relocating to the redeveloped B&M Baked Beans facility. In its permanent waterfront location in East Deering, the Roux Institute at Northeastern University will continue to provide educational, research, and collaborative programs in areas including artificial intelligence, computer and data sciences, digital engineering, advanced life sciences, and medicine. The Roux Institute at Northeastern University offers post-graduate degrees and certifications, conducts research, assists start-ups, and partners with private, public and non-profit organizations. The mission of the Roux Institute at Northeastern University is *a vision to enable the creation of a synergistic technology and life science-driven economy and workforce, the Roux Institute at Northeastern University designs, curates, and integrates learning, research, and entrepreneurial solutions in collaboration with industry, academic institutions, and community organizations to catalyze talent development and economic impact throughout Maine*.

In February 2023, the Portland City Council approved the Institutional Overlay Zone for the campus at the old B&M Baked Beans site. The project team is currently embarking on the site plan review and public input process with the City of Portland, which includes the preparation and submission of a MaineDOT Traffic Movement Permit application. Permits are expected by the summer of 2024, when construction will begin, with an opening date in 2027. The campus will continue to grow over time in subsequent years and phases.

1.1.1 Existing Conditions

The Roux Institute at Northeastern University currently leases 84,000 sf of institutional space at 100 Fore Street adjacent to the East End neighborhood and near the waterfront in downtown Portland. In the fall of 2023, there were 665 enrolled students and 175 staff, researchers and faculty. There are currently 16 graduate programs in computer and data science, analytics, cloud software, cybersecurity, life sciences, and project management. To realize its full potential, the Roux Institute at Northeastern University is seeking to relocate its campus and expand in size as described in the following section.

1.1.2 Proposed Development Program

The campus will be anchored by a 238,000 square foot Learning, Research and Collaboration building and the 58,000 square foot Bean Building housing a start-up incubator program. By 2032, the campus plans to accommodate 3,123 graduate students in addition to supporting uses as shown in Table 1. An 8,000 square foot café and a day care center providing care for 50 children will be located on-site primarily for the families of students, staff, and faculty. In addition to its academic offerings, the campus will benefit the community by contributing to local economic growth and providing open space along the waterfront, active transportation accommodations throughout the site, job creation, and innovation space. The site plan is shown in Figure 1.

Table 1 Development Program

Program Component		2027 (Opening)	2032
Day care center		50 Children	50 Children
Academic Café		8,000 sf	8,000 sf
Roux Institute at Northeastern University	Graduate students	1,899 students	3,123 students
	Faculty, Staff, and Researchers[1]	225 staff	300 staff
	Embedded startup[1]	60 staff	100 staff
	JAX and Other Signature Partners[1]	55 staff	64 staff
	Affiliated Users[2]	35 visitors	100 visitors
	Special Events (daily)	150 attendees	150 attendees

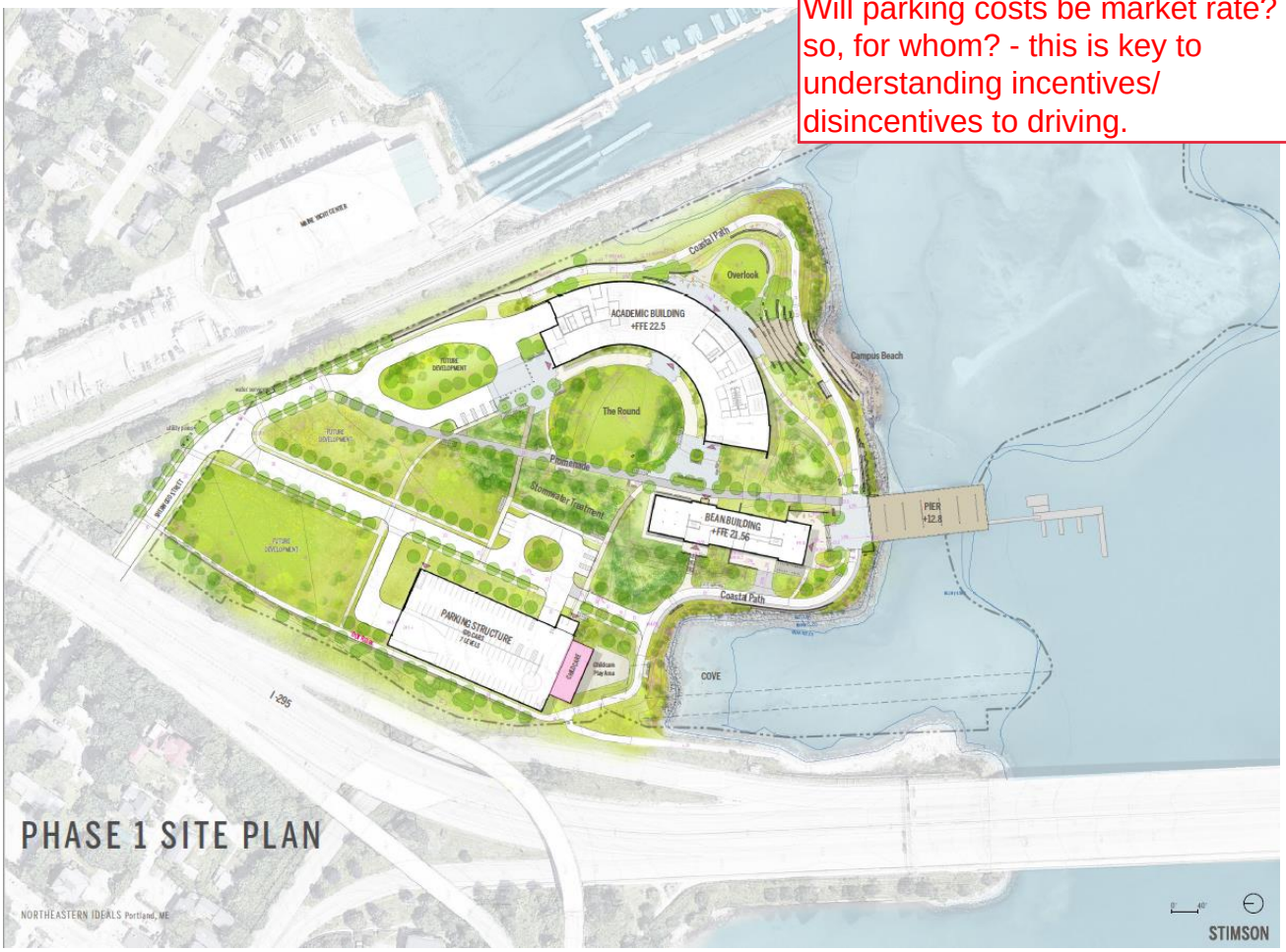
1 All staff counts are in full-time equivalents.
2 Affiliated Users is a broad category for occasional visitors such as corporate learners, investors, donors, mentors, and neighbors.

The garage has been designed to accommodate 708 parking spaces. For this phase, 16 of those parking spaces will be used to accommodate parking for 66 bicycles and the remaining 692 parking spaces will be used to accommodate vehicular parking. In addition to the garage spaces, there will be 14 parking spaces provided at grade on the site. All on-site parking will be paid parking, and a parking office will be created to manage permitting and enforcement for the

campus. Parking costs and regulations may vary between categories of users (students, staff, faculty, visitors, etc.). Parking will be shared between uses within the campus only. This development will not rely on any on-street parking. The campus may include on-site car sharing, enabling travel to and from the site using other modes, with the comfort that vehicles are available if necessary. The TDM measures presented in this plan will be critical to maintaining the expected parking demand.

Will the full capacity of the parking garage be available during Phase I? Will parking costs be market rate? If so, for whom? - this is key to understanding incentives/ disincentives to driving.

Figure 1 Proposed Site Plan



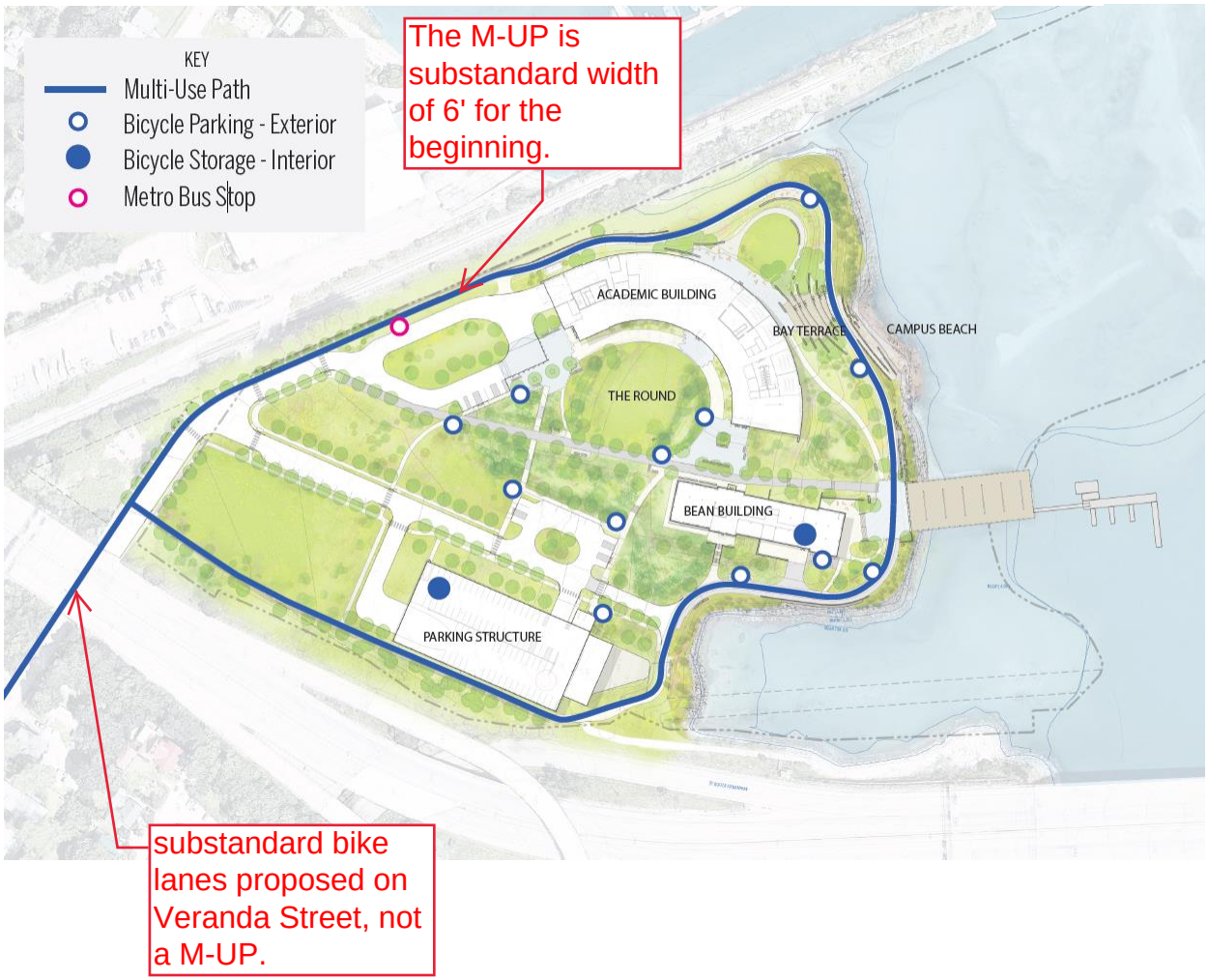
2

Mobility Context

For a TDM plan to be successful in shifting drive alone vehicle trips to transit, carpool, walk, and bicycle trips, it is essential to understand the multimodal transportation system surrounding the site. This section describes the existing transportation network challenges and future opportunities the Roux Institute at Northeastern University faces in redeveloping the site for their permanent campus.

The proposed waterfront site is located in East Deering adjacent to a marina and residential neighborhood comprising of single and multifamily homes as well as a commercial area which includes restaurants, bars, auto mechanics, and offices. I-295 runs along the western edge of the site, however the site will be well connected to the East Deering neighborhood, Back Cove, and the Portland Peninsula on the eastern promenade via vehicle, pedestrian, bicycle, transit and potential water taxi facilities. As shown in Figure 2, there are several promising opportunities to enhance and expand these transportation systems as part of the project to improve transportation mobility in and around the campus.

Figure 2 Campus Transportation Access



2.1 Vehicular Access and Circulation

A single vehicular access point to the site is provided via Sherwood Street at the intersection with Veranda Street through a 40-foot-wide highway underpass. Sherwood Street will continue to serve as vehicular access into and out of the campus in the future. The site is in close proximity to I-295, Route 1, Washington Avenue, and Baxter Boulevard. The traffic signal system along Washington Avenue is a traffic responsive system operating with high efficiency. Intersections of Washington Avenue at Veranda Street, at Presumpscot Street, and at Ocean Avenue are each signalized intersections.

2.2 Walking and the Pedestrian Environment

2.2.1 Existing Conditions

50' ROW

The surrounding East Deering neighborhood provides pedestrian amenities including sidewalks along Washington Avenue and Veranda Street. A sidewalk runs along the west side of Bates Street but narrows and is periodically blocked by utility poles. There is no sidewalk present on the east side of Bates Street. The Back Cove trail (multi-use path) runs along the Back Cove and Tukey's Bridge near the site. The main roadway access to the site is via Sherwood Street which consists of a 30-foot-wide roadway in a 40-foot wide right of way and includes non-continuous sidewalk segments mostly on the north side. The pedestrian connectivity to the Portland Peninsula is accessible from the Back Cove Trail across the west side of Tukey's Bridge. The sidewalk connecting from the intersection of Washington Avenue/Veranda Street is narrow and adjacent to vehicular traffic on the ramp to I-295. The sidewalk merges with the Back Cove Trail which adds bicycle and pedestrian demand to a narrow, shared use path over Tukey's Bridge. There is no existing direct connection to this shared use path from the campus.

2.2.2 Future Commitment

The Roux Institute at Northeastern University will improve pedestrian safety and connectivity to the East Deering neighborhood from the campus by providing continuous sidewalks on both sides of Sherwood Street. A crosswalk will be implemented across Sherwood Street at Veranda Street. Once on the site, pedestrian facilities will connect site uses and points along the waterfront. Improvements to pedestrian connections will increase walkability for the site.

2.2.3 Potential Future MaineDOT Infrastructure

or 12'?

The infrastructure described above will be constructed to allow for future connections to potential MaineDOT infrastructure. MaineDOT is contemplating a 14-16-foot-wide shared use path on a new bridge parallel to Tukey's Bridge on the east side that would provide a direct connection from the campus to the Portland Peninsula. In addition, a 10-foot-wide shared use path under Tukey's Bridge would improve pedestrian access to and from the campus to the Back Cove trail and for pedestrians traveling between East Deering and the Portland Peninsula using the future shared use path bridge. These new shared use paths would provide wider, safer, and more comfortable accommodations for pedestrians and improve connectivity.

Berlin/SLA pathway? Veranda St bike lanes?

2.3 Bicycling Environment and Facilities

2.3.1 Existing Conditions

or bike to Baxter Blvd/Back Cove Trail - safer

Bicycle facilities are present in the East Deering neighborhood on Washington Avenue including buffered bike lanes north of Presumpscot Street and faded sharrows along Veranda Street. Bates Street provides a bike lane from Washington Avenue to Baxter Boulevard. The Back Cove trail (multi use path) runs along the Back Cove and Tukey's Bridge near the site. There are currently no bicycle facilities on Sherwood Street. Similar to the discussion above describing the pedestrian access across the shared use path on Tukey's Bridge, bicyclists must also use the narrow path to connect to the Portland Peninsula. Although this shared use path provides access to the Back Cove trail, it does not provide direct access to the campus. There are 8 public U-racks totaling 16 bicycle parking spaces located within the 970 Baxter Boulevard parking lot.

Walkscore.com rates East Deering with a Bikescore of 58/"Bikeable" indicating some bike infrastructure is present. The 15-minute bike shed zone from the campus is illustrated in Figure 3.

Figure 3 15 Minute Bike Shed Zone

Quite skeptical this is the 15 min. bike shed & barely even drive shed



2.3.2 Future Commitment

The Roux Institute at Northeastern University is dedicated to creating a safer, complete street along Sherwood Street to accommodate bicyclists into and out of the site by providing bicycle lanes. The campus will provide 166 bicycle parking spaces for students, staff, faculty and visitors. This quantity is more than triple the required amount of bicycle parking per the Portland Technical Manual. Shower and locker facilities will be provided for those commuters who bicycle to campus. The Roux Institute at Northeastern University will explore providing a Bike Fix-it Station for bike commuters and other visitors to the site.

2.3.3 Potential Future MaineDOT Infrastructure

The infrastructure described above will be constructed to allow for future constructed connections to potential MaineDOT infrastructure. MaineDOT is contemplating a 14-16 foot wide shared use path on a new bridge parallel to Tukey's Bridge on the east side that would provide a direct connection from the campus to the Portland Peninsula. In addition, a 10-foot-wide shared use path under Tukey's Bridge would improve bicycle access from the campus to the Back Cove trail and bicycle connectivity between East Deering and greater Portland.

2.3.4 Other Potential Future Infrastructure

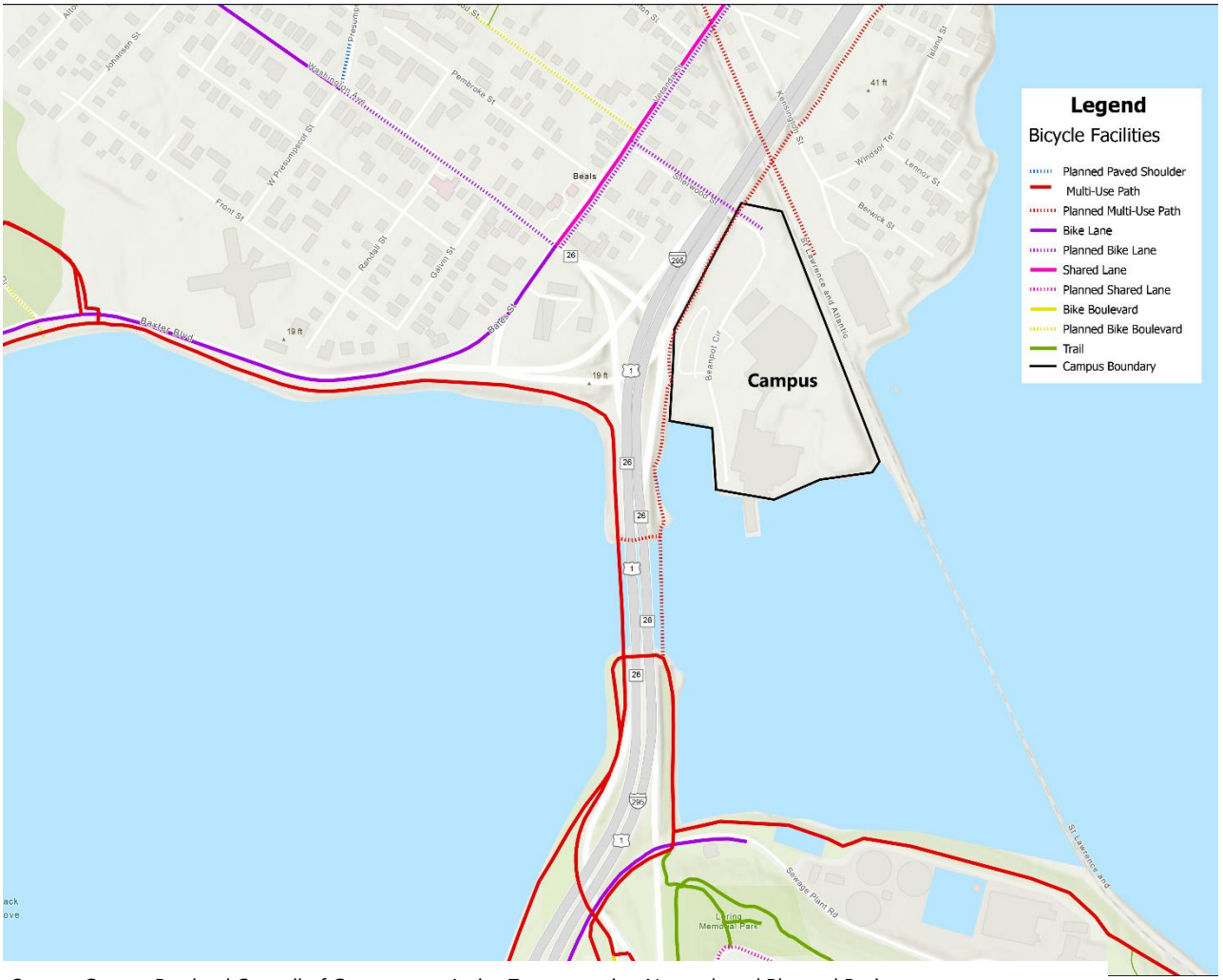
The City of Portland is currently working on the *Baxter Boulevard | Bates Street | Veranda Street Bikeway Project*[1] to implement buffered bicycle lanes on Veranda Street and a two-way bi-directional separated bike lane on Bates Street. Other potential opportunities for multi-use paths in the area include the Berlin Subdivision railroad right-of-way to points north ending at the Yarmouth Park and Ride on Exit 15 of I-295. Additionally, the Martin's Point Shared Use Path study considered a shared use path from Sherwood Street to the recently installed shared use path west of the Martin's Point Bridge starting at Wordsworth Street.

The City of Portland and Tandem Mobility have partnered to provide a bike share system in Portland. There are over 200 bicycles at over 40 stations predominately throughout the Portland peninsula. Pedal bikes and electric bikes are available by the minute and memberships are available on a monthly or yearly basis. There are currently no Portland BIKESHARE locations within the East Deering neighborhood in close proximity to the site, however there are a few on the East End across Tukey's Bridge. There is an opportunity to explore providing a new station on the campus which would expand the BIKESHARE network to the East Deering neighborhood.

Figure 4 presents the existing and potential future bicycle facilities surrounding the campus.

[1] Baxter Boulevard| Bates Street| Veranda Street Bikeway Project https://portland.civilspace.io/en/projects/better-bikeways-initiative

Figure 4 Existing and Potential Future Bicycle Facilities



Source: Greater Portland Council of Government Active Transportation Network and Planned Projects
https://gpcog.maps.arcgis.com/apps/View/index.html?appid=d5d7dbbc69534242b5fd4092c78f26e4

2.4 Public Transit

2.4.1 Existing Conditions

As shown in Figure 5, two bus lines currently stop near the campus: Metro Route 7 and Metro Routes 9A / 9B. Route 7 provides service between Portland and Falmouth with a stop at the Metro Pulse on the Peninsula as well as a stop near the campus at Veranda Street/Sherwood Street approximately a quarter of a mile from the center of the campus. Routes 9A/9B provide circular bus service between downtown Portland and North Deering with service running along Washington Avenue and Congress Street. Route 9A/9B stops on Washington Avenue near the site at Galvin Street and Veranda Street respectively which is under a half mile from the site. Bus transfers can be made at the Pulse and other stops on the Peninsula to reach the rest of Portland and several outlying towns.

Buses run continuously throughout the day, readily accommodating the varied schedules of students and other campus users. Metro BREEZ express bus service to Yarmouth, Freeport, and Brunswick and the Husky Line to Westbrook and Gorham establish a regional footprint for transit service. Ten local and express routes connect the campus to most of the Portland area with no more than one transfer.

The monthly ridership on Metro Route 7 is one of the lowest in the Metro system. In 2021, on an average weekday, there were 2521 boardings on Route 7. Each bus has the capacity of approximately 30 people and the bus runs 13 times per weekday inbound and outbound or a monthly capacity of approximately 7800 boardings, which leaves plenty of capacity on Route 7 to accommodate site related traffic.

In addition to the local Metro system, the Portland Transportation Center (PTC) in Thompson's Point provides regional bus and train service. Concord Coach Lines runs bus service from Portland to Boston, Massachusetts, Logan International Airport, and New York City as well as points north of Portland. The Amtrak Downeaster provides train service between Brunswick and Boston with a stop in Portland. Greyhound provides bus service between East Bayside in Portland and Boston, Massachusetts.

Figure 5 Public Transit Access



2.4.2 Future Opportunities

Metro is contemplating improvements to the transit system throughout Portland. In addition, the Roux Institute at Northeastern University is working with Metro to consider site specific transit accommodation for an on-campus bus stop that would connect the Roux Institute at Northeastern University to other key locations across the City, including housing, additional transportation connections, and partner organizations. The Roux Institute at Northeastern is also working with Metro and MaineDOT to identify park and ride locations where Roux students, faculty and staff can park and use Metro to travel to the site.

2.4.2.1 Transit Together Plan

In January 2023, The Portland Area Comprehensive Transportation System (PACTS) Policy Board approved the Transit Together Plan[2]. As of August 27, 2023, this plan enabled changes to Route 9 to provide more consistent 30-minute headways from 6am to 6pm on weekdays and from about 8am to 6pm on Saturdays. Route 9B will run one hour later in the evening.

In the Spring of 2024, Metro plans to make improvements to Route 7 by extending the route to the Portland Jetport via Congress Street with improved frequency and hours of operation.

[2] Transit Together - https://gpmetro.org/1644/Transit-Together---Route-and-Schedule-Ch

Frequency for Route 7 will improve from 60 to 30 minutes Monday through Saturday and services will be provided until 10pm or 11pm. The Falmouth loops will be eliminated, and Route 7 will use the Shaw's parking lot in Falmouth to turnaround. In conjunction, Route 5 service to the Jetport and Hutchins Drive will be discontinued to improve travel time between Portland and the Maine Mall. In addition, microtransit service will be implemented in east Falmouth. Microtransit riders within the zone will be able to request a ride using a smartphone app or phone call. These changes significantly increase the frequency and daily service to the campus.

2.4.2.2 Other Metro Opportunities

Metro is in the preliminary planning stages of studying how to extend Route 7 service along US Route 1 to Yarmouth. This extension could provide a bus route for campus commuters, with parking at the MaineDOT Exit 15 Park and Ride in Yarmouth.

The Roux Institute at Northeastern University is working with Metro to improve the quality and frequency of transit connections to the campus. Reduction of headways, modification of Route 5 or Route 7 to make a stop at the campus, and construction of a transit stop and turnaround on the campus, are all under consideration to further the convenience of transit for commuting to and from campus. The Roux Institute at Northeastern University will promote and incentivize transit use by subsidizing transit passes for students, staff, and faculty.

at what level: 100%?

2.5 Ride-Hailing

In addition to driving, transit, walking, bicycling, and carpooling, commuters have the option of using ride hailing services such as Uber, Lyft and/or traditional taxis. Although these services result in vehicle trips to and from the campus, they reduce the parking demand and allow for less vehicle ownership and more flexibility with commute mode choices.

2.6 Current Parking Policies

Parking is currently provided to staff, faculty and embedded partners at $50 per month, per spot. There are 176 parking spaces allocated for the Roux Institute at Northeastern University in the on-site garage. Embedded partners and employees who opt out of monthly parking pay $1/hour to park in the garage. Parking for visitors is also provided via a public rate of $5/hour and in adjacent, paid parking lots. Students of the Roux Institute at Northeastern University are not currently charged to park on-site but will be at the future campus.

2.7 Existing TDM Efforts

As part of this TDM plan, the Roux Institute at Northeastern University plans to bolster its current TDM efforts for the permanent campus proposed in East Deering. However, they are currently implementing TDM strategies on the existing campus at 100 Fore Street to help reduce drive alone trips:

- Appointed a transportation coordinator who surveys students, faculty and staff to develop an understanding about mode choice.

at what level: 100%?

- Subsidizing transit passes for faculty, staff and students. Posting transit related information in highly visible areas on site. Providing information on transportation commuting options including transit on the Roux Institute at Northeastern University's website.
- Offering convenient, hybrid course formats that blend online and on-site learning thus reducing the demand for commuting.
- Charging staff, faculty and embedded partners $50 per month per parking space.

what are students charged?

3

TDM Coordinator

The Roux Institute at Northeastern University will designate a TDM coordinator to oversee the administration of the TDM plan and the annual surveying and reporting process.

The Roux Institute at Northeastern University plans to follow industry best practice by appointing a campus-wide transportation coordinator. The TDM Coordinator will collect data on the TDM progress to ensure it evolves as the site develops. Once the site is operational, the TDM Coordinator will conduct a transportation survey for students, staff, and faculty to establish a baseline for future drive alone mode share reduction goals. They will also collect and disseminate information (including non-automobile travel options) on-site and organize outreach events and campaigns to encourage TDM participation. The TDM Coordinator will promote alternative transportation choices to educate those commuting to and from the campus and coordinate the implementation of TDM strategies to reduce single occupancy vehicle (SOV) trips. In addition, the TDM Coordinator will work with the City of Portland, Metro, GoMaine, car share, and bike share programs to improve non-SOV mode shares. The responsibilities of the TDM Coordinator include the following:

- Promote alternative transportation choices to students, staff, faculty, and visitors to reduce single occupant vehicles (SOV) trips.
- Coordinate the implementation of TDM strategies with students, staff, and faculty and conduct orientations to educate those commuting to and from the campus regarding their transportation options.
- Monitor bike rack usage and make recommendations as needed to accommodate potential growing demand.
- Coordinate with the City of Portland, Metro, GoMaine, car share and bike share, and other potential partners to improve access to non-SOV modes.
- Conduct annual Transportation Monitoring and activities necessary to measure the effectiveness of the TDM program in achieving the mode share reduction target.
- Administer and review TDM surveys on a yearly basis.

- Complete the standard City of Portland TDM Reporting Form, which will summarize how effective the various strategies have been, mode share data based on the surveys and program success and barriers.
- File annual TDM reports by May 15th of each year with the City of Portland.

The TDM Coordinator will be the primary point of contact for students, staff, and faculty regarding the TDM plan. The TDM Coordinator will develop strategies and incentives for students, staff, faculty, and visitors where applicable. The TDM Coordinator will also collaborate with commuters prior to when they start to inform them of the robust network of alternative mode choices available to them.

4

Baseline TDM Data

Baseline travel demand and supply data for the campus has been quantified for the Traffic Movement Permit (TMP) Application being submitted to MaineDOT as part of the site plan review process. Baseline data includes estimated mode split, future trip generation estimates, and proposed parking supply and future demand estimates. Reviewing survey data and how the existing students, faculty and staff are currently commuting to campus, and how they expect to commute to the proposed campus, provides insight to which alternative modes may have the greatest potential to reduce drive alone trips.

4.1 Modal Split

4.1.1 Roux Institute at Northeastern University Transportation Survey

The Roux Institute at Northeastern University conducted transportation surveys on a quarterly basis throughout 2022 and 2023 which collected responses from students, staff, and faculty at the existing 100 Fore Street campus. The survey asked how the respondents commuted to campus and then how they imagine they will commute to the new campus in East Deering. The results of the survey mode share data are presented in Table 2. It is important to note that the data collected slightly varied throughout the time of year. Additionally, the Roux Institute at Northeastern University is an evolving, growing Institute currently in a temporary location and this data is only representative of a portion of students, staff and faculty. Based on feedback collected from the survey, it is anticipated that transit and bicycle trips will increase, walk trips will decrease, and drive trips will slightly decrease due to the proposed campus location and existing transportation system in East Deering. The Roux Institute at Northeastern University will continue to survey on a quarterly basis and make adjustments as circumstances evolve.

Table 2 Transportation Survey Mode Split Data

	Existing Commute at 100 Fore Street		
	August 2022	April 2022	January 2023
Drive	77%	72%	73%
Transit	4%	3%	4%
Walk	13%	16%	19%
Bike	6%	7%	4%
Other	0%	2%	0%

what was response rate to the surveys? Is there a meaningful breakdown by Students vs staff/ faculty/others since mode share targets are different for each?

4.1.2 Traffic Movement Permit Mode Split Data

In addition to the data collected as part of the transportation surveys, expected mode share splits assumed in the Traffic Movement Permit (TMP) by land use are also provided in Table 3. The TMP mode splits are slightly more conservative in terms of analyzing vehicular traffic impact on the study area intersections. As additional bicycle and pedestrian connections are constructed in future years, it is likely that those mode shares will increase.

Table 3 TMP Mode Split

Population	Drive	Transit	Walk/Bike
Students	80%	10%	10%
All Other Populations	90%	5%	5%

Source: TMP indicates mode share assumptions presented in the Traffic Movement Permit

4.2 Trip Generation

As part of the TMP application, a trip generation analysis was conducted based on the 2032 development program presented in Table 1 using Institute of Transportation Engineers (ITE) publication, Trip Generation 11th edition as well as a custom trip generation methodology for the academic use of the site. The following assumptions were made to estimate student trip generation based on data from the campus:

- 43% of student enrollment are present on campus each day.
- 40% are daytime students and 60% are evening students.

Mode shares that were previously presented in Table 3, and applicable on site, internal capture trip rates were applied to the trip generation estimate to determine the external vehicle, pedestrian and walk trips as well as transit trips. The resulting estimated trip generation for the campus is presented in Table 4. The campus is expected to generate 237 morning and 521 evening peak hour vehicle trips, 20 morning and 51 evening peak hour transit trips, and 20 morning and 51 evening peak hour pedestrian and bicycle trips.

Table 4 Trip Generation

	Vehicle Trips	Transit Trips	Ped/Bike Trips
AM Peak Hour			
In	227	20	20
Out	10	0	0
Total	237	20	20
PM Peak Hour			
In	276	30	30
Out	245	21	21
Total	521	51	51

Source: Trip Generation Analysis presented in the Traffic Movement Permit

4.3 Proposed Parking Supply/Demand

A parking analysis was performed to estimate parking demand for the Roux Institute at Northeastern University. It was determined that parking demand peaks during the overlap between day and night users. Based on travel patterns of existing daytime and night students, the future enrollment will result in a peak demand of 561 spaces in the opening year and if the auto mode share stays as high as outlined in the TMP, 881 spaces in 2032.

The Roux Institute at Northeastern University is planning on providing parking on campus in a proposed parking garage designed to accommodate 708 parking spaces. For the first phase 16 of those parking spaces will be used to accommodate parking for 66 bicycles and the remaining 692 parking spaces will be used to accommodate vehicular parking. In addition to the garage spaces, there will be 14 parking spaces provided at grade on site. Since it is not feasible to construct parking garage levels during different phases of development, the parking garage will be constructed in 2027 to accommodate future demand. However, each interim phase will use only the number of parking spaces allocated based on that phase program.

In order to help mitigate the amount of vehicular traffic traveling to the campus, The Roux Institute at Northeastern University is actively exploring opportunities for satellite parking spots at existing park and ride locations within a short commute to the campus via tying into nearby transit routes or a Northeastern University-owned shuttle service.

To ensure parking usage in the structured garage does not exceed the permitted supply for each phase of development, the Roux Institute at Northeastern University will collect annual parking data to determine the number of vehicles parked throughout the day and evening. The TDM coordinator will obtain gate data for in, out, and occupancy counts on an hourly basis during the spring to coincide with the annual survey week. Moving into the future, the TDM coordinator will be working to reduce the automobile mode share to the site so that the garage is able to accommodate campus growth with that parking supply.

How will this be managed: e.g., restricting parking to 561 within a garage with a capacity of 692 spaces during Ph 1?

5

TDM Mode Split Targets

The TDM plan establishes short-term (3-5 year) and long-term modal split targets.

The TDM mode split target includes goals for reducing vehicle trips and increasing multimodal trips. Based on the future transportation system the campus will be supported by and TDM measures that will be implemented, the short and long-term targets that are proposed as part of this TDM plan are presented in Table 5. The mode share goals are within range of the City's *One Climate Future* document that sets a Key Transportation Milestone that by 2035, 26% of trips in the city will use alternative transportation modes, (up from 12%)[3]. The long-term goals are based on mode splits presented as part of the approved Institutional Development Plan for the Roux Institute at Northeastern University. The Roux Institute at Northeastern University is committed to implementing the TDM strategies presented in the following Section 6 to work towards achieving these mode split targets. The targets will be reviewed and updated based upon the annual TDM reporting process.

Table 5 Drive Mode Split Targets

Population	Mode Split Targets	
	Short-term (3-5 Years)	Long-term
Students	80%	70%
All Other Populations	90%	80%

Does "Drive" include all carpool occupants?

[3] https://www.oneclimatefuture.org/wp-content/uploads/2021/02/OneClimateFuture_FinalJan2021_Downsized.pdf

6

Mode Split Target Strategies

The TDM plan includes a set of strategies aimed at achieving the TDM goals described above. The strategies are targeted to students, staff, and faculty traveling to and from the campus in East Deering. The Roux Institute at Northeastern University is committed to enhancing the multimodal transportation systems around the campus including providing improved pedestrian and bicycle facilities and transit access/service.

As part of the quarterly transportation survey, the Roux Institute at Northeastern University gathered data on which TDM strategies would more likely encourage students, staff, and faculty to commute differently to the proposed campus. The feedback indicates that Roux Institute at Northeastern University commuters are most likely to shift to a different mode share when showers, lockers and bike storage is available, there is a credit system for sustainable commuting, a bus route is provided from downtown, a park and go is available and bike share is available for commuters. Additional open-ended comments were provided and are also reflected in the TDM strategies presented in this section.

Table 6 below presents the strategies that the Roux Institute at Northeastern University is committed to fulfilling which are grouped into three main categories: Infrastructure/Transit/Mobility Improvements and Contributions; Incentives; and Information/Education/Marketing. These commitments include timelines for implementation. Table 7 provides a list of potential strategies the Roux Institute at Northeastern University is considering implementing in a future phase of the project.

Is the 'Long-Term' column in Table 6 what was intended for Table 7?

Timeline Years	
Short-term (0-2 Years)	Long-Term (2+ Years)

Table 6 TDM Strategies – Commitments			Timeline Years	
Category	**Strategy**	**Targeted User/Group**	**Short-term (0-2 Years)**	**Long-Term (2+ Years)**
Investments				
Public Transit Access	Work with Metro to provide a new transit stop on campus. The transit stop will include a shelter and provide real-time bus information as well as a turnaround area on site.	Students/Staff/Faculty/Visitors	Implement	
Public Transit Access	Subsidize the purchase of student and staff/faculty bus passes. What is the level of subsidy? 100%?	Students/Staff/Faculty	Implement	
Bicycle Access	Secured bicycle parking will be provided via 100 exterior and 66 interior spaces. This equates to over 3 times the City of Portland Land Use Code parking requirements totaling 166 bicycle spaces. This equates to over 3 times the required amount of bicycle parking. What happens to the interior bike parking when more veh. parking needed?	Students/Staff/Faculty/Visitors	Implement	Continue to monitor and provide additional bicycle parking if demand increases.
Bicycle Access	Improve Sherwood Street by providing bicycle lanes. The current plans show substandard width bike lanes (4').	Students/Staff/Faculty/Visitors	Implement Sherwood Street bicycle lanes.	
Bicycle Access	Provide on-site showers and lockers Where are these planned to be located? Is there a campus gym?	Students/Staff/Faculty	Implement	
Pedestrian Access	Improve the pedestrian network by providing new sidewalks along Sherwood Street and a new crosswalk across Sherwood Street at Veranda Street.	Students/Staff/Faculty/Visitors	Implement Sherwood Street improvements.	
Constrained Parking	Parking on-site will be constrained to a parking garage designed to accommodate 708 parking spaces (only 692 to be used for vehicular parking and 16 for 66 bicycle parking spaces) in addition to 14 at-grade parking spaces.	Students/Staff/Faculty	Implement	Ongoing parking management as long-term phasing is completed.
Water Access/Marine Feature	Build a modern pier over the footprint of the current pier, in order to accommodate water shuttles and taxis.	Students/Staff/Faculty/Visitors		Implement
Incentives				
Flexible Work and/or On-line Learning	Provide a hybrid course format that allows online and on-site learning.	Students/Staff/Faculty	Implement	
Flexible Work and/or On-line Learning	Flexible scheduling (ability to start-stop some class hours outside of peak travel periods, e.g.)	Students/Staff/Faculty	Implement	
Parking Pricing	Parking charge for students, staff/faculty (unbundled parking costs - not included with tuition and not provided as a benefit to staff/faculty) What is the anticipated cost/month --> market rate?	Students/Staff/Faculty	Implement	
Transit Incentives	Pre-tax transit pass purchasing for employees Not a transit pass provided via employee/student ID as done by most institutions (USM/SMCC, etc) with no out of pocket outlay required?			
Preferential Parking	Prioritize parking for carpools. where?/how?	Students/Staff/Faculty	Implement	
	Carpools will receive reduced price parking.	Students/Staff/Faculty	Implement	
Programmatic Incentives	Join the Emergency Ride Home program through the GOMAINE program.	Students/Staff/Faculty	Implement	
Electric Vehicle Parking	Monitor EV parking demand study and increase the chargers, their power, and number of EV-ready spaces as demand dictates.	Students/Staff/Faculty/Visitors		Monitor usage and provide additional EV charging infrastructure as needed.
Information/Education/Marketing				
Education on Travel Choices	Join GOMAINE. Encourage staff/faculty to join Go Maine & Record “green trips”.	Students/Staff/Faculty	Implement	
Education on Travel Choices	Provide a website that will present travel choices to campus available to students/staff/faculty with links to resources. Information on bicycling routes, bicycle parking infrastructure, and walking infrastructure will be provided on the website	Students/Staff/Faculty/visitors	Implement	
Education on Travel Choices	The TDM coordinator will send out organizational emails promoting alternative modes/TDM program to staff/faculty and students.	Students/Staff/Faculty	Implement	
Education on Travel Choices	The TDM coordinator will facilitate carpools by maintaining a database of interested parties; commuters will be matched with others who live near them or can access a park and ride location along their route. The Roux Institute at Northeastern University will also participate in the Maine DOT/Maine Turnpike Authority GOMAINE, which facilitates carpools across nearby sites and provides participants with rewards for carpooling	Students/Staff/Faculty	Implement	
Education on Travel Choices	The TDM coordinator will provide new students, staff, and faculty with orientation packets describing non drive-alone commutes and incentives.	Students/Staff/Faculty	Implement	
Education on Travel Choices	Provide transit maps and schedules on-campus.	Students/Staff/Faculty/Visitors	Implement	
Education on Travel Choices	Provide a real-time electronic screen displaying transit information – ‘Next Bus’ at bus stop.	Students/Staff/Faculty/Visitors	Implement	

Can these also be added to the lobbies of the two main Ph 1 buildings for increased visibility of multimodal options?

Table 6 TDM Strategies – Commitments			Timeline Years	
Category	**Strategy**	**Targeted User/Group**	**Short-term (0-2 Years)**	**Long-Term (2+ Years)**
Future Investments				
Bicycle Access	Consider installing a bike repair station Seems logical and low-priced to add short-term in garage	Students/Staff/Faculty/Visitors	Investigate	Implement
Bicycle Access	Consider providing electric bike charging Can 'simple' AC outlets be added in vicinity of interior bike parking in short-term to encourage e-bike/bike usage in general?	Students/Staff/Faculty/Visitors		Investigate through surveys to determine if this would be effective and used.
Portland BIKESHARE	Investigate establishing a new BIKESHARE station on campus. Currently, there are no BIKESHARE stations located in East Deering. Reported survey results said high desirability of bikeshare - implement short-term?	Students/Staff/Faculty/Visitors	Investigate	Implement as demand dictates
Car Share	Explore providing one car share vehicle on campus.	Students/Staff/Faculty		Provide car share parking as future program is developed.

7

Monitoring and Reporting Plan

Program monitoring and reporting are important components of a successful TDM program because they provide a quantitative benchmark of the program's effectiveness in reducing single occupancy vehicle trips and resulting parking demand over time. The monitoring process provides feedback on whether progress toward the TDM targets is being made. The TDM Coordinator will use the information gathered through the monitoring plan to direct the ongoing implementation of the TDM program, allowing for adjustments and the introduction of new strategies.

The TDM Coordinator will be responsible for monitoring the efficacy of the TDM plan and making adjustments to the plan as needed to achieve modal split targets.

An annual survey will be administered to gather data for student, staff, and faculty commuting characteristics. Surveys provide a qualitative understanding of how well TDM program elements are working. This survey will ask respondents how they commuted to campus for the last five days and will provide a comprehensive list of mode share choices. Additional information including vehicle ownership, parking costs, and mode share barriers and incentives will also be collected. Parking utilization count data will be obtained annually to support the monitoring process. The TDM Coordinator will obtain data to quantify the hourly in, out, and number of parked vehicles in the garage. This data will help to establish the resulting parking demand for the enrollment at that time.

Should additional data such as bicycle parking counts or other TDM tracking efforts be needed to support the monitoring effort, additional data will be collected. This might include the following data needs:

- Should bicycle parking utilization counts be needed to support the monitoring process, the number of bicycles parked on campus will be tracked. This data will be reviewed for trends in

bicycle usage over time to determine if bicycle parking is adequate and meets the needs of the bicyclists.

› The TDM Coordinator will work with Metro to track the transit usage of commuters via the pass program implemented. The data for the same time period as outlined above in the surveys will be obtained and reviewed.

The results of monitoring effort will be reported to the City of Portland on an annual basis by May 15th using the standard reporting tools provided by the city.

Zachary Powell <zpowell@portlandmaine.gov>

1 Bean Pot Circle PL-002724-2023 DPW WR Comments

Justin Pellerin <jrp@portlandmaine.gov> Wed, Dec 13, 2023 at 3:29 PM
To: Zachary Powell <zpowell@portlandmaine.gov>
Cc: Janine Ba <janineba@portlandmaine.gov>, Bradley Roland <brad@portlandmaine.gov>, Benjamin Pearson <bnp@portlandmaine.gov>, Keith Gray <kgray@portlandmaine.gov>

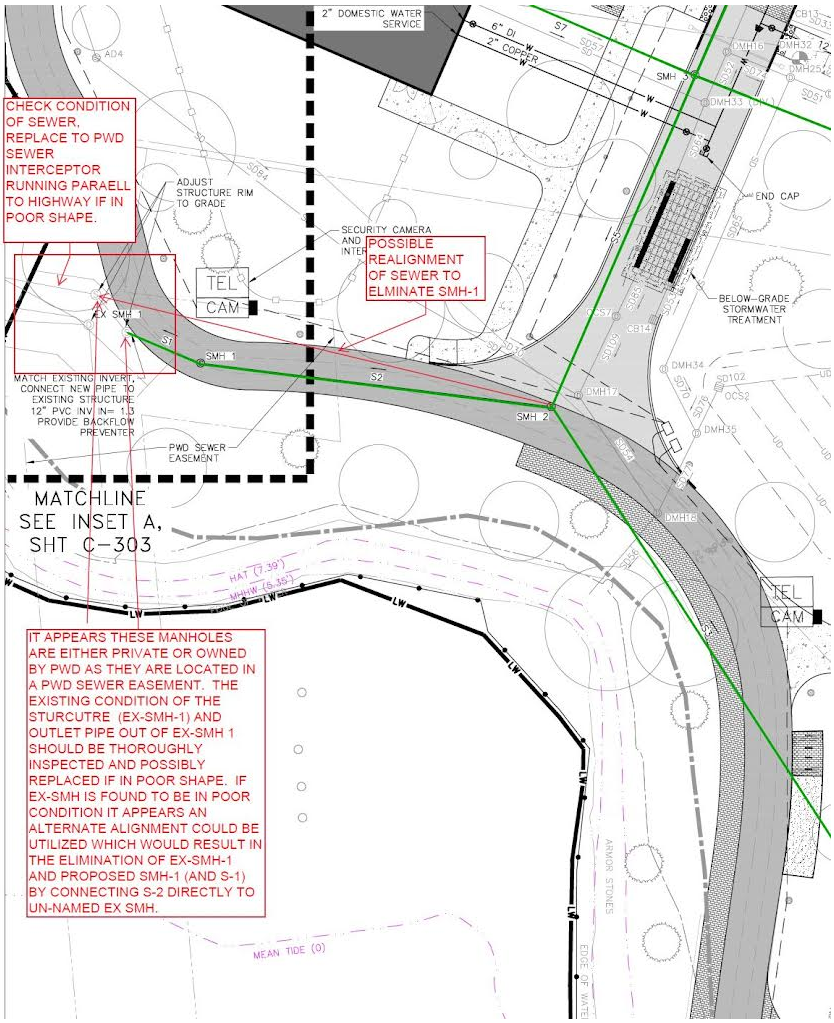
Hi Zach
Here are the Water Resource's comments for the 1 Bean Pot Road Submission.

Sherwood Street Roadway Improvement comments:

- New catch basin structures in Sherwood Street should be installed per City of Portland Technical Manual standards. Each basin should have a headstone and be installed with a 3' sump. Include applicable details in the plan set.
- All storm drains and underdrains 10" and greater shall meet the City's stormdrain material specifications listed in section #2 of the technical manual.
- It appears the proposed 12" underdrain/stormdrain pipe running along the southerly curb line between station 212+00 and 213+00 is in conflict with an existing gas main. Is the applicant working with Unitil to relocate the gas main in this area?
- DPW is in the process of inspecting the existing storm drain line in Sherwood Street. Improvements may be needed within the project paving limits if the pipe is found to be in poor condition.

Campus Site Plan Comments:

- Please review and reference the email sent from the Water Resources division to Woodard and Curran on 12/13/23 for discussion and comments pertaining to the proposed modifications of the existing storm drains and water mains in Sherwood Street. It appears the alignment of the existing Sherwood Street storm drain is not shown correctly on the plans which is resulting in stormdrain design conflicts with existing 12" watermain and the proposed 12" water main improvements. The existing condition plans and design plans should be updated to address the storm drain alignment issues and to resolve any remaining utility conflicts between the 12" water main and the City's storm drain system in Sherwood Street.
- PWD should review the proposed sanitary connection into Ex SMH-1. The City's mapping indicates this structure is owned by PWD, however that is somewhat unclear.
- See sketch below for further comments on the proposed private sanitary sewer connection into the municipal system.



- The plans should be updated to depict the locations of all the required ESC controls including but not limited to dewatering/stockpiling areas with proposed BMPs and the proposed location of the anticipated stone construction entrance.
- The applicant shall confirm the sizing and design of the proposed external grease trap associated with the LRCB building and verify it is designed in accordance with Chapter 7 of the City's sewer use rules and regulations.
- The project will be required to submit a dewatering plan to the Water Resouce's Compliance Coordinator in accordance with chapter 8 of the City's sewer use rules and regulations prior to any excavation work and dewatering activities occurring on-site.

Justin Pellerin, P.E.
Senior Water Resources Engineer
Department of Public Works
jrp@portlandmaine.gov
207-874-8881

public works

2023-12-13 City of Portland Mail - 1 Bean Pot Circle_Sherwood Street Drain Alignment_WC...pdf
363K

Justin Pellerin <jrp@portlandmaine.gov>

1 Bean Pot Circle PL-002724-2023: Existing Sherwood Street Storm Drain Location

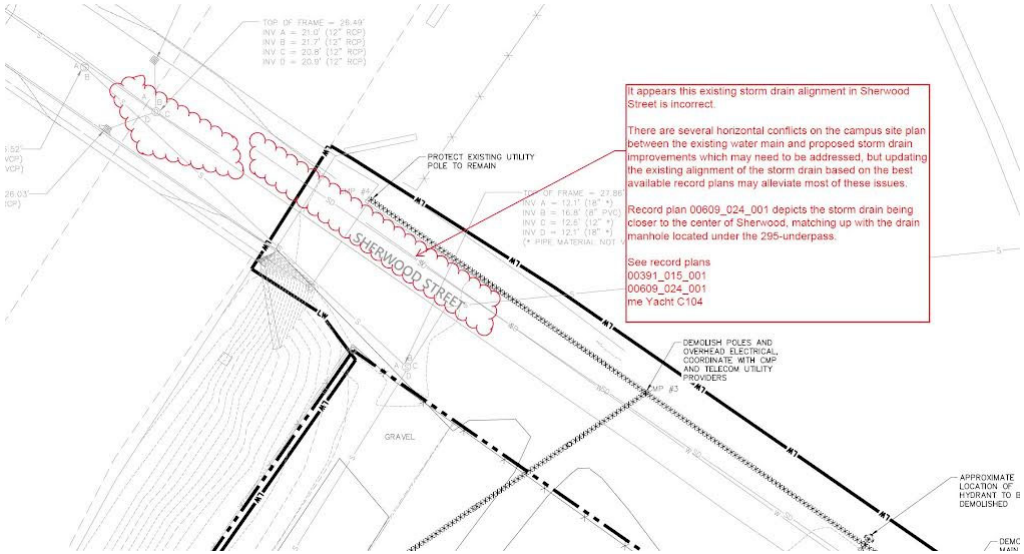
1 message

Justin Pellerin <jrp@portlandmaine.gov> Wed, Dec 13, 2023 at 3:06 PM
To: Lauren Swett <lswett@woodardcurran.com>, Amy LeBel <alebel@woodardcurran.com>
Cc: Zachary Powell <zpowell@portlandmaine.gov>, Bradley Roland <brad@portlandmaine.gov>

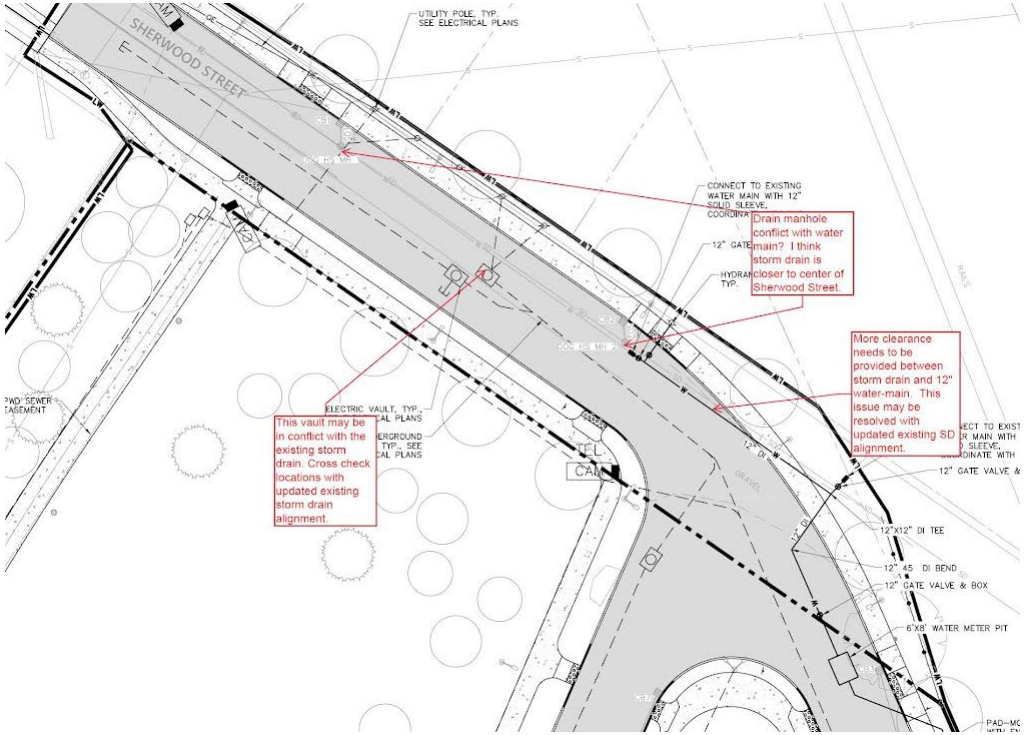
Hi Amy
Can you send me a share file link so I can send you a few record plans I've tracked down which depict the location of the existing storm drain system in Sherwood Street?

In reviewing the Phase 1 NU development and Sherwood Street improvement plans it appears the location of the existing drain line might not be depicted correctly in our GIS or in the project's existing conditions survey.

Record plans **00609_024_001** and **00391_015_001** show the pipe to be located more towards the center line of Sherwood Street, lining up with the existing surveyed DMH under the I-295 bridge.



This alignment issue appears to be causing some horizontal conflicts between the proposed Sherwood Street watermain and storm drain modifications. If the existing storm drain alignment and water main alignment are correct, then one of those pipes would have to be offset to allow for these proposed modifications to be made.



I think generally these conflicts may be non-existent once the alignment is updated. I am going to see if we can get this pipe CCTV'ed and have the horizontal alignment verified. I'll let you know when that happens and it may make sense to send your project surveyor out to update the field verified alignment.

I will reference this email in my general project dev rev project comments. Didn't want to send this novel through the formal comments response protocol.

Let me know if you have any questions, and please send along that file share link.

Thank you!
Justin Pellerin, P.E.
Senior Water Resources Engineer
Department of Public Works
jrp@portlandmaine.gov
207-874-8881

public works

Zachary Powell <zpowell@portlandmaine.gov>

1 Bean Pot Circle - PL-002724-2023

Ann Machado <amachado@portlandmaine.gov> Wed, Dec 13, 2023 at 5:31 PM
To: Zachary Powell <zpowell@portlandmaine.gov>

Zach -

Here are my review comments:

Section 8.5.7.D

1. B-5 is the underlying zone - no dimensional requirements under Table 7-E except height which is governed under the IOZ requirements.

3. Street Wall Height
- min. 45' & max. is 105'
  - LRC - 68.6
  - garage - 66.2 stair tower (86.7)

4. Stepback - needed at street wall if higher than 105' - 10' min. - LRC goes from 22.5' to 13.5'

5. Building length
- a. no building is longer than 250 ' - don't need publically accessible corridor. - figure 3.3 244'
- c. & d. seem to be part of the design review not zoning per se

Building Height - Figure 8-F
The maximum height for the various height zones based on the average grade appears to be met. **My only issue is with the Average Grade plans. The sheet (AS61.0 gives the average grade of the garage as 20.8. I calculate it as 18.8'**

Civil Plan C-102

Shoreland Zone -The highest annual tide has been located but I don't see a 25' shoreland zone setback located

Floodplain
- Both the approximate FEMA flood zone line and the approximate flood zone line based on EL 9 are shown. I'm not sure what they mean by the approximate FEMA flood zone line. Are they overlaying the FIRM from 1986? EL 9 impacts the LRC building and we will need a floodplain permit application for new construction and elevation certificates.
- The other question that I have is about the timing of the new flood zone maps. We still don't know when the new maps will go into effect. Obviously we are reviewing the current site plan under the current floodplain maps. My question is, if the new maps go into effect before the building permits are applied for, would the buildings then need to meet the base flood elevation for the new maps?

Let me know if you have any questions or if I missed anything.

Thanks.

Ann

Ann Machado
Zoning Administrator
Permitting and Inspections Department
City of Portland, Maine
(207) 874-8709
amachado@portlandmaine.gov

Institutional Development Plan
Roux Institute Campus
November 2022

Att. 4



IDEALS
Initiative for Digital Engineering and Life Sciences

The Roux Institute
Northeastern University

Table of Contents

Introduction 1

1. Establishing the Context 2

Our Roots 3
Institutional Context 4
Neighborhood Context 5
Site Context 6
Utilities 7
Coastal & Natural Resources 8
Historic Resources 9
Municipal Plan Context 10

2. Imagining the Future 12

Campus Programming 13
Phasing 14
Development Plan 15
Design Principles 16
Design Guidelines 17
Connected to the Waterfront, Portland, & the World 18
Places to Gather 19
A Sustainable & Resilient Campus 20
Enhance Access 21
Contribute to Portland's Open Space Network 22

3. Creating the Path Forward 23

Assessment of Growth 24
Transportation 25
Trip Generation 26
Transportation Improvement Opportunities 27
Managing Transportation Demand 30
Transitions 31
Safety & Environment 32
Neighborhood Engagement 33
Construction Management Principles 34
Community Benefits 35

APPENDIX A: Conceptual Massing Studies

APPENDIX B: Conceptual Shadow Studies

APPENDIX C: Supplemental Transportation Information



Introduction



Artist Interpretation

Northeastern University's Roux Institute represents a bold new model for learning, research, and entrepreneurship, developed from day one in partnership with industry, government, and other colleges and universities. Through the strong partnership and jointly held vision of Northeastern University leaders, Barbara and David Roux, and the Harold Alfond Foundation, the Roux Institute is delivering on the university's mission to erase the boundaries between the real world and academia.

Northeastern University founded The Roux Institute to stimulate the regional economy through the cultivation of talent and cutting-edge technology capabilities within Maine and northern New England. It achieves this goal by customizing learning programs and research initiatives to meet the needs of employers, by integrating classroom learning with professional experience, and by supporting the launch of innovative startup companies. The Roux Institute's collaborations with its employer-partners keep the institute in step with the economy's—and society's—changing needs and opportunities. They also enable the Roux Institute to identify and begin to address the state's most consequential challenges.

The Initiative for Digital Engineering and Life Sciences (IDEALS) is a Maine non-profit organization tasked with and solely committed to locating and developing a campus for the Roux Institute. Northeastern University in Portland, Maine: a space for cutting-edge educational, research, and collaborative programs in areas including artificial intelligence, computer and data sciences, digital engineering, advanced life sciences, and medicine. IDEALS was formed in 2018 with support from David Roux, a technology entrepreneur and Lewiston native, and his wife Barbara. They sought to create a graduate institute providing opportunities for Maine people to fill talent gaps for growing digital and life sciences companies while ensuring the 21st century success of greater Portland and Maine's economies. IDEALS recruited Northeastern University to establish and run the program, and the Roux Institute at Northeastern University launched in 2020. The Roux Institute now offers post-graduate degrees and certifications, conducts research, assists start-up entities, and partners with private, public, and non-profit entities to develop 21st century workforce talent and spur innovation.

The Roux Institute is temporarily located in leased space in Portland. A permanent campus for the Roux Institute is essential to fulfill its educational and economic potential. The vision for that home - the Roux Institute Campus - is one that allows for continued growth of the education, research, entrepreneurial, and collaborative programs of the Roux Institute while providing space to support those programs and serve the community. After completing an exhaustive four-year search both on and off the Portland peninsula and its surrounding area, IDEALS acquired land formerly occupied by the B&M Baked Beans facility along the Portland waterfront.

Recognizing the prominent role that major educational and healthcare institutions play in the health and well-being of the community, the City of Portland's Land Use Code allows for the creation of Institutional Overlay Zones (IOZ) to "provide a regulatory mechanism where an improved regulatory structure is needed to facilitate a consistent, predictable, and clear growth management process." Consistent with that purpose, we seek designation of an IOZ for the Roux Institute Campus. We will simultaneously seek to change the underlying zone to B-5 Mixed-Use Business. The IOZ designation process requires two components: an Institutional Development Plan (IDP, this document) and a regulatory framework. The purpose of this IDP is to establish baseline institutional data for existing land uses and services while also communicating planned growth; it is the basis of the proposed regulatory framework, submitted under separate cover. The regulatory framework translates the IDP into a set of clear and specific zoning requirements, which will constitute the text and map amendment to the City's Land Use Code. Unlike other institutions for which the IDP process was established, the Roux Institute is in its early years and has not established a stand-alone campus. The IDP allows Northeastern University and IDEALS to memorialize the long-term strategic plan for the Roux Institute Campus in consultation with the Portland community at the very outset of development.

Creation of a new campus provides the opportunity to establish a people-oriented space right from the start. It will prioritize people over cars by creating a pedestrian-friendly landscape supported by multi-modal programs that provide incentives for alternative transportation options. The campus will improve site resilience and sustainability by replacing much of the existing pavement and rooftops with green space and incorporating sustainable building practices.

We intend to create a dynamic, mixed-use campus that contributes to the East Deering neighborhood without encroaching on it or burdening City resources. By providing ancillary uses on site (office and lab space for institutional partners, housing for students, faculty, and employees, a hotel for visitors to the Institute and its partners, retail, and personal services), the Roux Institute Campus will meet demand created by the Roux Institute at Northeastern University and its collaborating partners.

1. Establishing the Context





IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

The Roux Institute
Northeastern University

The Roux Institute Campus will be the first of its kind in the Northeast. It will integrate graduate education in technology and science with groundbreaking research and a wide range of collaborations to spark innovation and economic development. The campus is being designed at a scale that will facilitate learning, collaboration, and research breakthroughs and innovations, encourage start-up businesses, and strengthen existing Maine businesses and institutions. Every component of the campus is directly linked to the mission of the Roux Institute, from the housing – keep students and faculty on campus to foster collaboration and reduce traffic, to the hotel – provide a convening space and accommodation for Institute guests from around the globe so that, together, they can spark new ideas. The iconic waterfront location, minutes from downtown Portland (by bike, bus, boat, car, or on foot) with striking architecture and a vibrant community, will attract talent from around the globe and spread economic advancement throughout Portland and beyond.

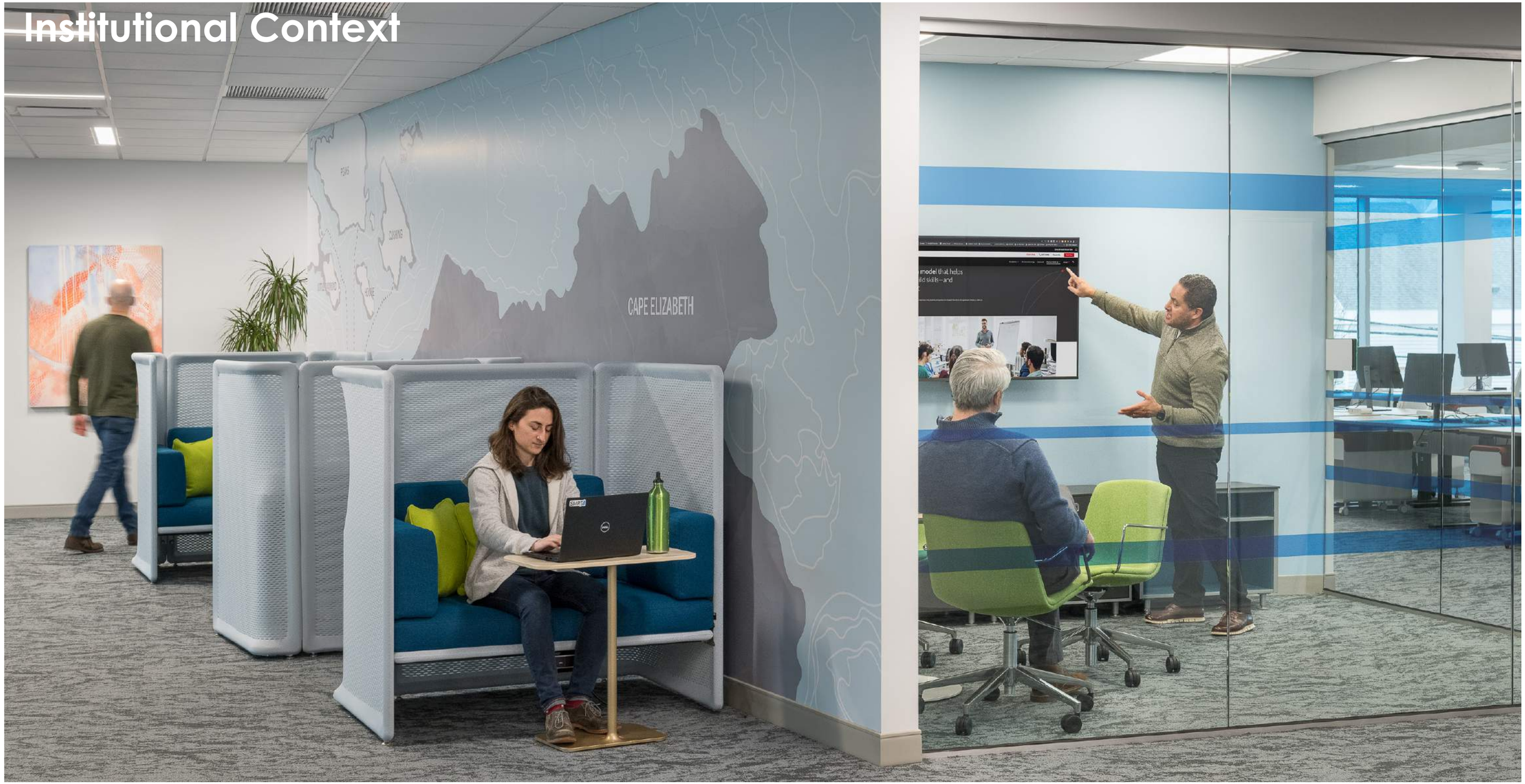
At the direction of Northeastern University, IDEALS will oversee the design and construction of a primary academic building housing the Roux Institute and will also seek partnerships from the private sector to construct and operate ancillary uses, such as housing, parking, a hotel, and commercial office and laboratory buildings that support the primary academic uses—all of which would be on a ground lease basis.

The Roux Institute at Northeastern University was established to develop talent, conduct research, and encourage innovation to support and attract businesses that will thrive in the 21st century economy.

Vision: The State of Maine will be home to a thriving, high-tech economy fueled by people and businesses leading in experiential artificial intelligence, machine learning, big data, life sciences and medicine, engineering, and data visualization. This new economy will attract people and businesses from around the world to the region and provide unprecedented opportunities for all Mainers in a manner that honors and enriches the Maine lifestyle and culture.

Mission: With a vision to enable the creation of a synergistic technology and life science-driven economy and workforce, the Roux Institute designs, curates, and integrates learning, research, and entrepreneurial solutions in collaboration with industry, academic institutions, and community organizations to catalyze talent development and economic impact throughout Maine.

Institutional Context



The Roux Institute at Northeastern University currently has 125 full-time, Maine-based employees, 55 of whom are faculty and post-doctoral staff. The Institute currently has 500 graduate students enrolled. Of Maine's 16 counties, 15 are represented in the student body. The Institute offers 17 graduate programs in computer and data science, analytics, cloud software, cybersecurity, life sciences, and project management.

These educational programs are bolstered by collaboration. The Institute's partnership ranks have grown tenfold as more than 110 Maine organizations now work with and benefit from the institute. Approximately 900 of these partners' employees have taken courses designed by the Roux Institute in concert with their employers. Additionally, 36 startup companies have worked in residence at the Roux Institute, creating 52 new Maine jobs and raising $21M in investment capital to grow their businesses.

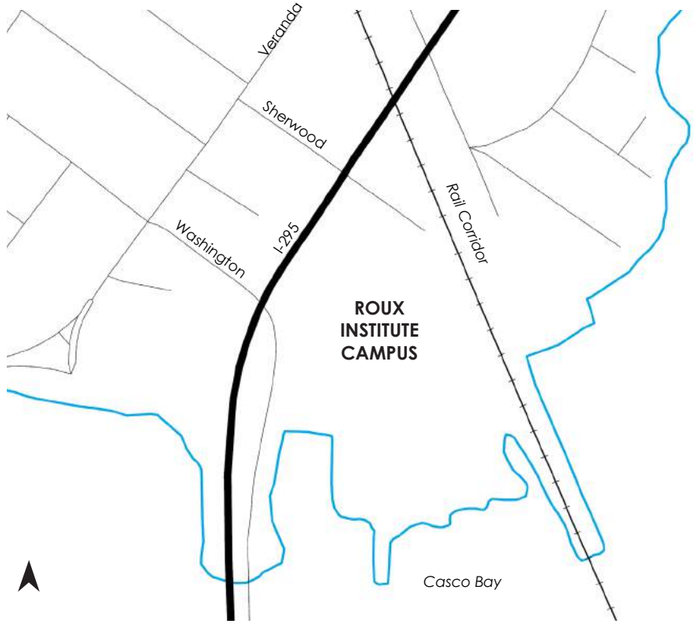
The Roux Institute at Northeastern University currently occupies 44,000 square feet of space leased at 100 Fore Street. This space enabled the Roux Institute to begin providing graduate education services in Portland, but significantly more physical space is needed to meet its Mission & Vision. In the near term (0-5 years), the Roux Institute anticipates enrollment expanding to 1,750 learners; in the medium term (10-20 years), enrollment is anticipated to grow to 2,500; and in the long term (20+ years), enrollment is projected to grow to 5,100, including on-campus, virtual, and hybrid learning settings. The Roux Institute intends to transfer all operations from 100 Fore Street to the new Roux Institute Campus.

Neighborhood Context

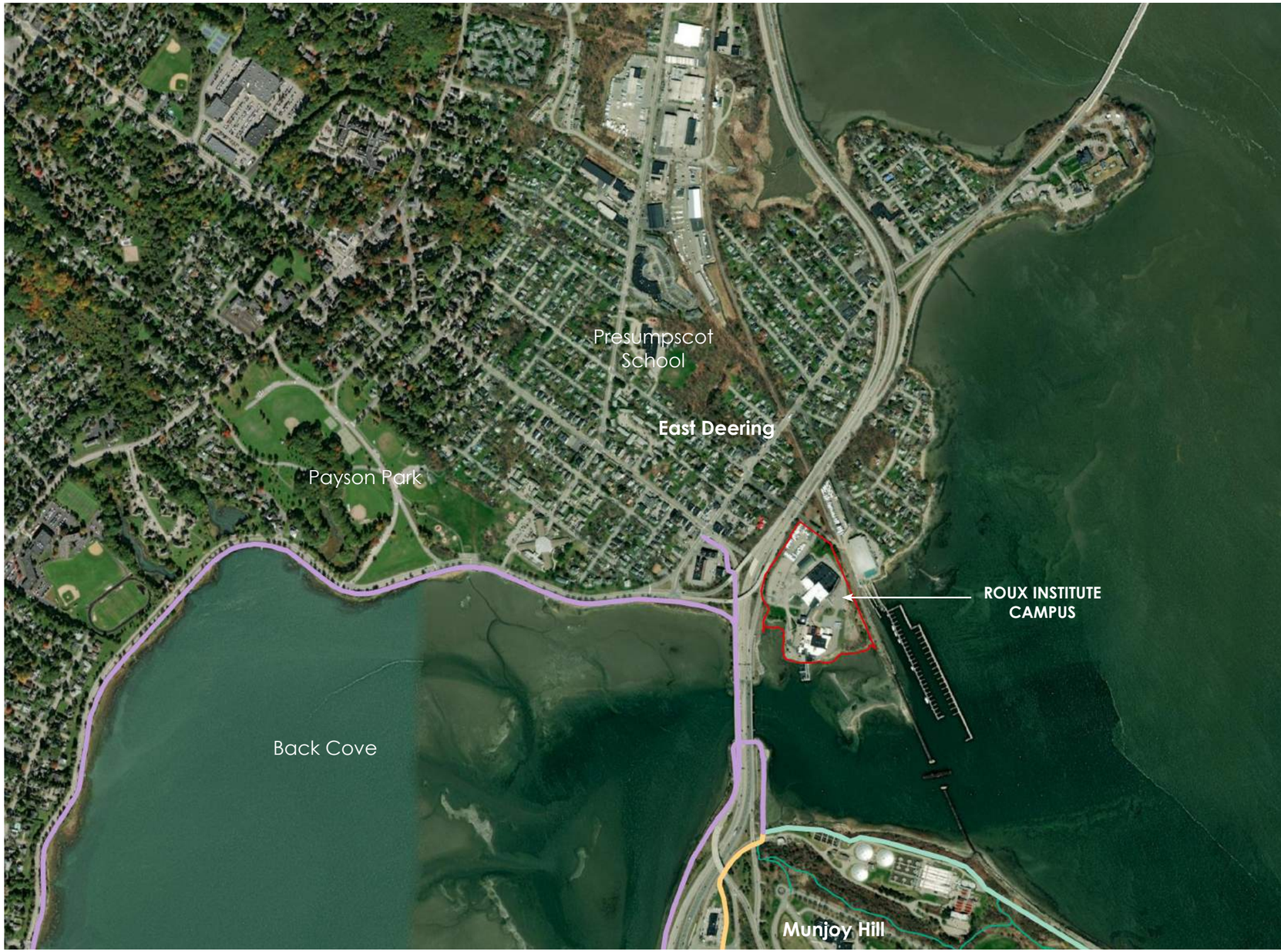
The proposed Roux Institute Campus is located within Portland's East Deering neighborhood, near a residential area of single and multi-family homes (three-story apartment buildings) and a commercial node featuring restaurants, bars, mechanics, and offices. While proximate to these areas, the site is remarkably buffered. I-295 to the west, state-owned vacant parcels to the north, a disused rail corridor and marine business to the east, and Casco Bay to the south collectively surround the property. Access to the site is via Sherwood Street at the intersection with Veranda Street, through a 40-foot-wide highway underpass.

This setting makes for a campus full of potential. Due to its relatively large 13+ acre size and existing buffers, the site lends itself to dense development. Taller buildings with smaller footprints will allow for additional public open space, a mix of landscaped and natural green space, and public waterfront access while helping to reduce impact on Portland's challenged housing stock. The Roux Institute Campus will connect to and enhance the surrounding East Deering neighborhood while simultaneously fostering its own identity.

Future development will acknowledge these advantages and constraints. The site must be planned responsibly to maximize community access while minimizing off-property impacts. The creation of compelling pedestrian, bicycle, water taxi, and public transit connections to the Roux Institute Campus and the waterfront will be particularly crucial. Additional information regarding mode splits, pedestrian, transit and bicycle infrastructure is included in Section 3 of this IDP.



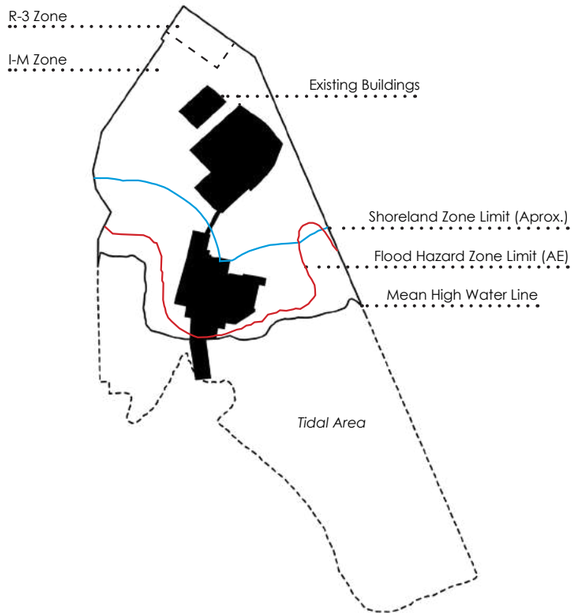
The site's current industrial use does not allow for public open space or amenities or access to considerable shoreline frontage.

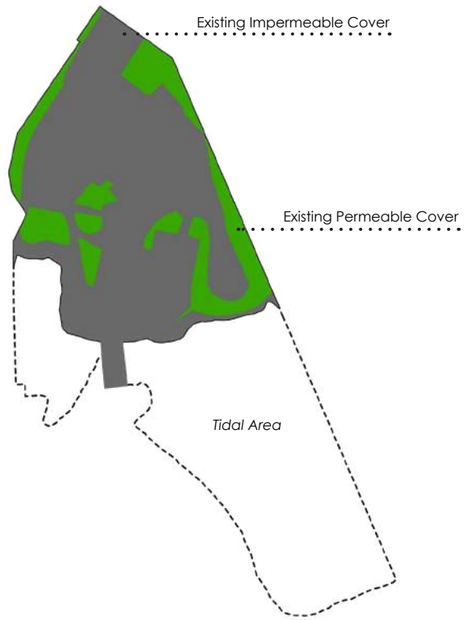


The site is near several of Portland's most popular bike and pedestrian trails, including Back Cove Trail, Bayside Trail, and Eastern Prom Trail. Its redevelopment can facilitate better community access to Portland's waterfront, as public open space enhancement is a key design parameter for the Roux Institute at Northeastern University.

Site Context









Under current conditions, the site is inaccessible to the public.

Zoning
The majority of the site is currently zoned I-M (Moderate-Impact Industrial), with the area immediately adjacent to and across Sherwood Street zoned R-3 (Residential). Parcels adjacent to the site include I-L (Low-Impact Industrial) at the Maine Yacht Center to the east and R-3 (Residential) across the railroad tracks to the north. Parcels west of I-295 are generally zoned R-5 (Residential) and B-2 (Mixed-Use Business).

Existing Buildings & Parking
City property assessment records indicate existing buildings were previously used for manufacturing and warehousing. The site has 272 striped parking spaces and additional unstriped trailer parking areas. The reported general building use and total floor area is provided in the table below.

Size of Existing Buildings (Food & Seafood Processing, Packing, and Distribution Land Use Classification)	Total Floor Area (SF)
Main Production (Bean) Building	63,255
Warehouse, Annex and Fuel Storage Building	49,897
Maintenance (Fish House) Building	16,728
Storage, Labeling and Packing Building	80,180
Finished Product Warehouse Storage Building	9,572

Relationship to Water
The parcel includes approximately 13+ acres above mean high water line (the site) as well as an adjacent 11 acres of submerged lands. The site has 1,000 linear feet of waterfront, within associated Flood Hazard and Shoreland Zones.

The City of Portland designates a shoreland zone within 250 feet of tidal water bodies. Within the shoreland zone, a minimum setback of 25 feet from the normal high-water level is required for structures, roads, and driveways.

Portions of the site are delineated as Special Flood Hazard Areas according to FEMA's Flood Insurance Rate Map (FIRM). The current and effective FIRMs for Cumberland County, based upon FEMA's 1986 publication, indicate portions of the site are within the AE Zone, representing 1% annual chance of flooding. Base flood elevations range from 9 to 11 feet.

Impervious Areas
The majority of the site is developed land, with limited areas of natural vegetation. Approximately 10 acres of land above the mean high-water line are impervious (paved areas, building roofs, etc.). The remaining 2.5 acres of permeable area include lawn and approximately half an acre of vegetated, early successional non-lawn area adjacent to the rail corridor abutting the site to the east.

Not only is the site largely covered in pavement and building structures, it is also inaccessible to the public. Fencing prevents access to the waterfront and the interior of the site. This security was necessary for industrial use. However, new development can "soften" site edges and provide improved access to the waterfront.

Geotechnical & Environmental Investigations
IDEALS conducted preliminary soil investigations of the site. The results of these investigations inform the design of structures. Beneath a surficial layer of pavement or topsoil, the test borings encountered a soil profile generally consisting of fill and uncontrolled fill, overlying glaciomarine clays or bay mud, overlying marine sands, overlying glacial till, and overlying refusal surfaces (probable bedrock).

IDEALS also conducted environmental site assessments, including review of available documentation (such as current permits, record drawings, historic photos, and maps) and site investigations involving soil and groundwater sampling, as well as survey for and sampling of building materials. The environmental site assessments indicated no evidence of oil or hazardous material releases that would require remediation. Environmental conditions including fill soil that may be encountered during earthwork or generated as excess material will be properly managed within the context of the construction project. IDEALS identified hazardous building materials including PCB-contaminated caulking and asbestos containing materials (ACM) consistent with what would reasonably be anticipated given building ages, which will be remediated during the demolition and development process.

Utilities

B&M's facilities required intensive utility and infrastructure development sized appropriately for industrial use. Fortunately, this historic use translates well to re-use in a denser development, as proposed. Based upon existing utility infrastructure age and historic and projected demand, we anticipate the need for targeted investment and renewal; however, there are no foreseen barriers to servicing the campus development.

Water
Domestic and fire protection services are provided by Portland Water District's (PWD) infrastructure at Sherwood Street. The public water mains nearest to the site are 8-inch and 12-inch, consisting of ductile iron and cast iron. The site is, and will continue to be, serviced by a combined domestic/fire protection loop.

Wastewater
Wastewater will continue to discharge to a gravity public sewer along the I-295 corridor. Downstream of the service connection, public sewer transitions from 15-inch to 48-inch reinforced concrete gravity line conveying combined storm and sanitary sewer from the East Deering neighborhood west of I-295. The 48-inch combined sewer transitions to a 3-barrel (two 18-inch and one 30-inch) siphon along Tukey's bridge and discharges through a pumping station prior to treatment at the Portland Water District's (PWD) East End Wastewater Treatment Facility.

Wastewater is conveyed across a portion of the site near Sherwood Street and I-295 from properties to the northeast (Lennox, Berwick, and Kensington Streets) via an easement benefiting PWD. This easement will remain in place unless otherwise approved by PWD.

Stormwater
Stormwater runoff from the site is managed through a combination of catch basins, buried infrastructure, and overland flow, discharging untreated runoff via outfalls to the bay. The Roux Institute Campus redevelopment allows for reduction of site impervious area and incorporation of low-impact development techniques; these will improve the water quality and reduce the quantity of runoff prior to its discharge into Casco Bay.

In addition to private stormwater outfalls, a public stormwater outfall is located at the site's southwest corner. This outfall will continue to convey drainage from the neighborhood west of I-295 through an easement located near the southwest corner of the site.

Electricity
Central Maine Power provides electric power via an overhead 12.47kV 3-phase distribution system. The facility has two main secondary metered services. New utility corridors will include electrical infrastructure improvements. Energy-saving technologies and renewable energy sources will be incorporated into building and campus design to reduce electricity consumption and advance sustainability goals. Additional information regarding Energy Conservation Measures is included in Section 3 of this IDP.

Telephone & Data
Fiber-optic internet is located along Veranda Street and Sherwood Street.

Natural Gas
Unitil provides natural gas service to the site via a 6-inch diameter service. Natural gas infrastructure in the East Deering neighborhood is provided at intermediate pressure.



Utility	B&M Historic Demand Reference	Roux Institute Campus Projected Demand (Near-Term)	Roux Institute Campus Projected Demand (Long-Term)
Water	153,000 gallons per day	87,000 gallons per day	215,000 gallons per day
Wastewater	90,000 gallons per day	79,000 gallons per day	195,000 gallons per day
Electricity	0.5 megawatts	11 megawatts	28 megawatts
Telephone & Data	Unknown	Multiple service providers resulting in redundant services to the campus.	Potential service hub for cloud providers such as AWS, Microsoft, etc.
Natural Gas	72,000 average monthly therm	183,000 average monthly therm	408,000 average monthly therm

Coastal & Natural Resources

Immediately adjacent to this highly developed site are natural resource areas including: an estuarine inter-tidal emergent marsh located east of the site near the rail corridor; coastal wetlands for all areas below highest annual tide; tidal waterfowl and wading bird habitat, and blue mussel habitat. Portions of the site are delineated as Special Flood Hazard Areas according to FEMA's Flood Insurance Rate Map (FIRM).

The majority of the on-site work will occur adjacent to, but outside of, coastal wetlands and estuarine inter-tidal emergent marsh areas. Erosion and sediment control measures will be required during construction to protect adjacent natural resources. On-site work in coastal wetlands will be required for pier removal and replacement, bank stabilization and stormwater outfall installation. The footprint of the proposed pier will not extend beyond the existing pier. Likewise, bank stabilization is not intended to extend beyond the toe of the existing riprap slope. Off-site improvements for the bike/pedestrian trail connection will likely require fill in coastal wetlands and will be coordinated through Maine DOT and permitted through Maine DEP and ACOE. Work in coastal wetlands will be minimized to the maximum extent and completed in accordance with Maine DEP wetland permitting requirements (NRPA).

Topography of the site slopes downward from the north to the south, toward the water. The highest elevations are near Sherwood Street, at elevation 28 +/-. The lowest grades are near the loading dock at the B&M Bean Building, at elevation 8.5 +/-. These low areas are only 1-foot above Highest Astronomical Tide.

In recognition of existing vulnerabilities and future sea level rise, resiliency will be key to the Roux Institute Campus. The redevelopment will raise site grades and incorporate infrastructure improvements to create a flood resilient landscape. It will also rehabilitate this brownfield site, enhance natural resource areas, and reduce the impacts of current impervious, industrial conditions by creating habitats that foster ecological diversity and productivity at the water's edge.



The coastal wetland includes rockweed anchored to rocks in tidal mudflat.



Stormwater outfalls drain into the wetland where a scour channel cuts across the mudflat.



The tidal flat is home to tidal waterfowl and wading bird habitat.



Blue mussels are abundant under the pier, where soft-shell clams also grow.

The tidal mudflat portion of the site stretches far into the inlet, resulting in dramatic daily change.



Outfall pipes drain to wetlands in the ravine.



The ravine's slope is vegetated with native sumac and invasive Japanese knotweed.



The estuarine system extends up a ravine along the site's eastern boundary.

Historic Resources

The campus was occupied by residences and a lobster cannery prior to 1913, when Burnham & Morrill (B&M) relocated its operations to the site from Franklin Street. The address of the B&M facility at that time was Water Street, which granted access from the west prior to construction of I-295. By 1913, the five-story B&M Bean Building stood on site, as well as the cod-fish building located on the pier. In the 1920s, B&M began experimenting with brick-oven baked beans in an attempt to offset declines in other product lines (canned fish, meat, and vegetables), and in the 1920s and 1930s began selling brick-oven baked beans in cans. In 1965, B&M's address was designated as 1 Bean Pot Circle. With an appreciation for the B&M history at the site, IDEALS, as the landowner, nominated the B&M Bean Building for designation as a City Historic Landmark. Following a positive recommendation from the City's Historic Preservation Board, the Council approved the landmark designation of the Bean Building (Cannery) and area surrounding the building including the pier. A more extensive description of site history and the preservation of the Bean Building may be found in the Landmark Designation Report for the Burnham & Morrill Company Cannery by Heritage Consulting and Essex Preservation Consulting, dated June 2022.

Bean Building

The Bean Building (Cannery) was the cornerstone and flagship of the B&M food manufacturing facility. Constructed circa 1912 by Aberthaw Construction Co., Boston, MA, the building housed the baked bean manufacturing processes and the plant management offices. It is a robust five-story, reinforced-concrete building with a high live-load floor capacity. The concrete frame is exposed on the exterior of the building with brick and masonry infill walls and glass windows. The building is structurally sound with only minor structural modifications required. The main entry is on the 2nd floor level, which is at elevation 21.5', well above today's 100-year flood zone elevation. This, along with the rugged structure and historic community value, make the building an ideal candidate for reuse. A permanent exhibit of artifacts and photographs is planned for the site.

A Changing Shoreline

Buildings are not the only changes that occurred onsite over the last 100-plus years. As indicated in the diagram at right, the shoreline has significantly shifted in reach and shape across decades. Some of the shifts were caused by intentional human manipulation; others appear to have been natural changes where mud flats (with limited salt marshes) extended onto the site.

A New Perspective

The historic relationship of the East Deering neighborhood and B&M site was one of stark contrast between residential and industrial uses. Sudden transitions between residential and manufacturing zones, and from manufacturing to the sea, heightened the disparity. Construction of the Grand Trunk railroad line in the 1860s, and then of Interstate 295 in the 1960s, further isolated the campus' industrial identity. The Roux Institute Campus presents an opportunity for new connections, public access, and thoughtful transitions from the surrounding neighborhoods into a dynamic environment built around the B&M Bean Building.

Changes to shoreline from 1930 to 2022









The Bean Building as it stands today





Views of the B&M campus and related infrastructure earlier in Portland's development (all images from Maine Memory Network)

Municipal Plan Context

The former B&M site is ripe for renewed use and redevelopment. The proposed campus includes adaptive re-use of the B&M Bean Building, facilitates public interaction with the waterfront, creates a new walkable core of diverse uses, and bolsters economic opportunity in East Deering, the City of Portland, and beyond.

Portland's Plan 2030 focuses primarily on eight aspects of Portland's identity and performance: environment, waterfront, transportation, housing, recreation and open spaces, facilities, historic resources, and economy. While the facilities section generally focuses on municipal operations and the waterfront section is focused on the working western, central, and eastern waterfront areas of the peninsula, the other six sections are directly relevant to the proposed plan. Excerpts from the plan relevant to the Roux Institute Campus are provided here.



Portland's Plan 2030, adopted in 2017, is the City's comprehensive plan.

Environment
"Adopt sustainable land use and transportation policies that support connectivity, walkable neighborhoods, and multi-modal transportation."

"Plan for the mitigation and redevelopment of brownfields to support productive uses and a healthier environment for residents."

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."

Housing
"Encourage additional contextually appropriate housing density in and proximate to neighborhood centers..."

"Identify priority growth areas."

"Allow for a range of housing models in City codes, whether small units, co-housing, or others that may suit changing needs and demographics."

Recreation & Open Space
"Encourage physical and visual access to Portland's waterfront – Casco Bay, Back Cove, and the Stroudwater, Presumpscot, and Fore Rivers – as a "blueway" network and an extension of public space for local and regional recreation and transportation needs."

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

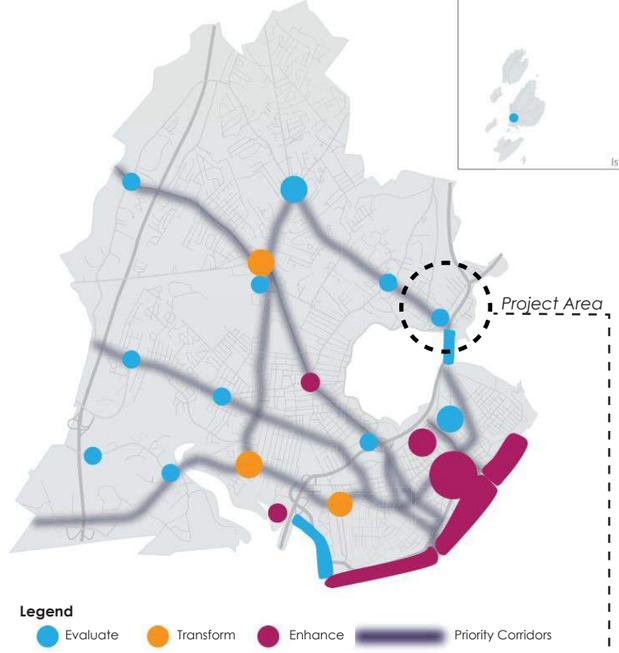
"Ensure an appropriate balance of continuity and change as Portland grows and evolves."

Economy
"Support job creation and business growth through public initiatives and private, institutional, and regional partnerships."

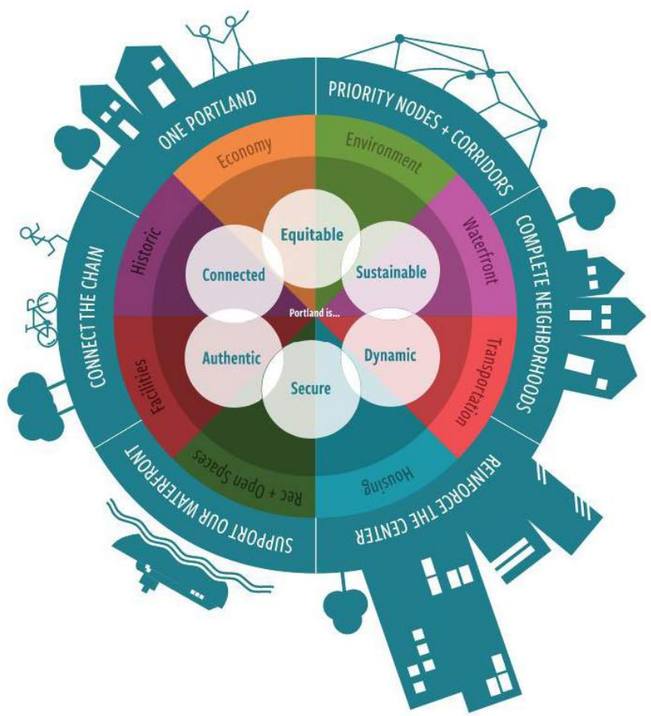
"Develop programs that support industries with high-growth/high-value potential such as life sciences, food production, information technology, and marine-related industries."

"Modify ordinances and make strategic investments to better promote business development and job creation in priority areas."

"Ensure that the growth of Portland's educational, medical, and cultural institutions is integrated into Portland's urban fabric through the use of high-quality design, management of impacts, community partnerships, and innovative planning."



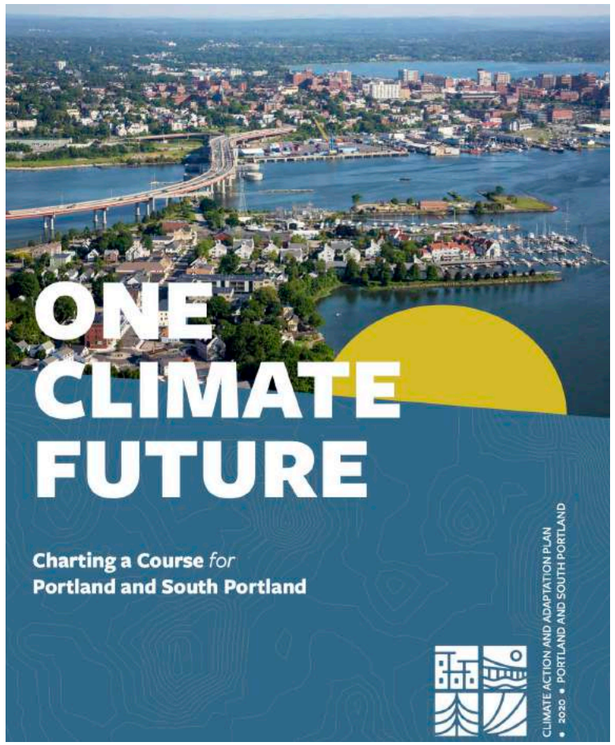
Nodes & Priority Corridors
Portland's Plan 2030 emphasizes potential evolutions in land use. Washington Avenue is identified as a priority corridor, which can provide "additional mixed-use, higher density growth to take advantage of the transit benefits and services that well-designed, diverse corridors can offer." The Washington Avenue/Veranda Street/Tukey's Bridge area is called out for evaluation: such areas "should be assessed for their ability to address neighborhood needs and serve as centers for complete neighborhoods."



Municipal Plan Context (continued)

One Climate Future
The Roux Institute Campus is an opportunity to showcase sustainable buildings, fostering a resilient community across East Deering and the region of Portland. Its waterfront location demands proactive planning for extreme weather and storm surge events although it is not located within the FEMA Velocity Zone. Its location on a developed, industrial piece of land with a single point of access/egress, means that campus development must take advantage of existing infrastructure within the East Deering neighborhood, facilitating trips by active alternative, multi-modal, and mass-transit options.

In 2020, the Cities of Portland and South Portland both adopted a collaborative sustainability and resilience plan: One Climate Future. The plan addresses many challenges, priorities, and strategies for responsible climate stewardship and mitigation of climate-related public health threats. It includes great specificity and is summarized by six general action items. The following are One Climate Future's "six big moves" and discussion of their relevance to the Roux Institute Campus.



Portland and South Portland both adopted the One Climate Future plan in 2020.

1. Build better buildings.
A new campus of higher education, research, and development deserves thoughtful design; it represents an opportunity to implement best practices for energy efficiency, healthy communities, human comfort, and interaction with the surrounding environment. Aside from the iconic B&M Bean Building, existing on-site buildings are not suitable for adaptive reuse. Much of the site will be redeveloped with new construction. In order to attract and respect climate-conscious students and corporate partners, these new buildings will be created with sustainability and resilience top-of-mind. As described in the design guidelines within this plan, Northeastern University is committed to high-performance buildings while setting a standard for design through signature architecture.

2. Connect people to places, to opportunity.
Graduate education, research, and collaboration exist in order to provide opportunity. At their best, they do this in a collaborative and social setting. The Roux Institute at Northeastern University will achieve both. The campus presents this opportunity to the nearby community, where on-site resources become local community resources, as shown on the 15-minute walkshed map included on page 27. Finally, by establishing itself within and supporting existing public transportation networks, the Roux Institute Campus will be accessible to all Portlanders as well as those in the broader greater Portland region, and beyond.

3. Power everything* with clean renewable electricity.
Electrification allows for appliances, buildings, and systems to support the shift to renewable energy in our power grid, without cementing a need for fossil fuels moving forward. This entails moving away from carbon intensive heating and energy sources, as more energy is produced by clean energy renewable sources like solar and wind. IDEALS and Northeastern University will evaluate power purchase agreements for renewable energy sourcing, incorporate passive solar and photovoltaics, consider the use of geothermal and sea water exchange heating and cooling for buildings, and encourage EV usage through on-site charging capacity.

4. Grow a circular economy.
Fostering technology knowledge and life-science research in Portland will diversify its economy and help prepare for the future. Yet workers in these fields will still rely on other, existing aspects of the regional economy. Food producers and preparers, makers and artists, essential workers, and support staff, all make the City of Portland a compelling and delightful place to live. On a small scale, the Roux Institute Campus will facilitate a circular economy through mixed-use, neighborhood-scaled urbanism that creates a place to live, learn, work, and play. On a broader scale, it will strengthen the region through education, research, and collaboration with corporate and community partners; fueling progress through innovation.

5. Nourish ecosystems, which nourish us.
The Roux Institute Campus' tidal waterfront location will allow it to meaningfully contribute to ecological health by designing with nature in mind. While B&M has been a steward of their property, the campus development will result in a significant reduction in impervious surfaces and yield a healthier site that protects and enhances the local ecosystem, which has been diminished through the historically industrial development of the property.

6. Build collaborative capacity to create this future.
The Roux Institute at Northeastern University will develop technology and life science talent and position Mainers, new Mainers, and international students for financially stable and personally rewarding careers. The campus will connect budding talent with existing corporate and community partners, and thus create opportunity for fresh thinking and an innovative future. The Roux Institute Campus will catalyze tech talent and innovation in Portland.

Other Studies
A number of other studies have been conducted that are centered on or relevant to the project area, as outlined below:

I-295 Corridor Update – Scarborough to Brunswick. The I-295 Corridor Update included a study of 17 interchanges that provided access between I-295 and major highways/arterials extending from Scarborough to Brunswick. Improvements for this project were recommended into near-term, medium-term, and long-term. Despite acknowledgement of the heavy volumes and weave section in the vicinity of the Roux Institute project site, no specific improvements were included at the Exit 8 interchange. The long-term recommendations include future study of travel demands, capacity, and opportunities in the urban core of Portland.

Veranda Plan. The Veranda Plan started with an investigation of the rehabilitation and replacement alternatives for I-295 over Veranda Street and US Route 1 bridge. Ultimately, the bridge was replaced and the project construction continues. The project will realign Veranda Street to improve safety and operations by allowing all movements between Veranda Street and points south on I-295 via signalized intersections. The project will also improve bicycle and pedestrian travel along Veranda Street by upgrading it to a complete street.

Martin's Point Shared Use Path Study. The Martin's Point Shared Use Path Study recommended several projects to improve the connection from the Back Cove Trail to Martin's Point including crossing the Roux Institute Campus site. Unfortunately, the current design of the I-295/Veranda Street interchange did not include right of way for a shared use path connection as was envisioned in the Martin's Point Shared Use Path Study. However, the project will be providing a shared use path connection along the waterfront of the site and is interested in future connections that may be developed to reach Martin's Point and beyond.

2. Imagining the Future

Artist Interpretation

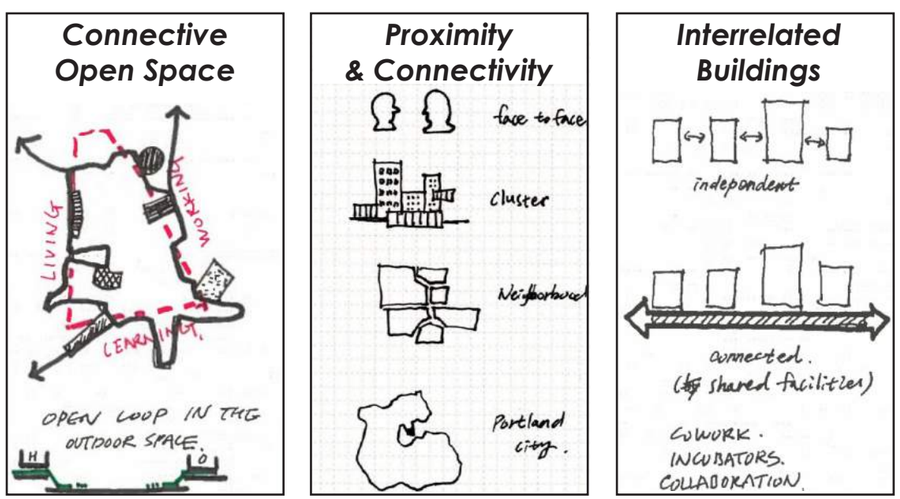
Campus Programming

The Roux Institute Campus will encompass mixed uses regularly associated with graduate education and research: classrooms and laboratories, faculty offices, an incubator, dining areas, convening spaces, fitness centers, neighborhood retail facilities, and housing. As an essential part of the Roux Institute's graduate education programming, the campus will support collaboration with private industry, other institutions, and community organizations. This collaboration is essential to the Roux Institute at Northeastern University's approach to learning through integrated research, student-work opportunities, and entrepreneurial endeavors. Light manufacturing, research and design facilities, and other industry-oriented spaces will allow start-up businesses and established companies to contribute employment opportunities, foot traffic, and dynamism to the area. Hotel rooms will cater to prospective students, start-ups, visiting lecturers, specialists, business partner guests, and families of students. Most importantly, the hotel will provide the opportunity for unplanned and informal interactions that are so essential to new ideas and innovation.

A range of rental housing options will foster community and provide on-site opportunities for students, faculty, staff, and their families. These units will ease some of the housing and traffic pressure that might otherwise result from new residents attracted to Portland by the Institute. Housing units not occupied by residents affiliated with the Roux Institute may be made available to the public to further assist in easing the housing pressure.

Public open space, including waterfront access and recreational uses, will foster a sense of community. Restaurant, neighborhood grocery, and/or other limited retail options will provide another means for welcoming the neighborhood while reducing dependence on automobiles. The Roux Institute will incentivize transportation options including buses, bikes, pedestrian access, car pooling, and water shuttle or taxi connections.

The long-term vision for the site is to maximize green space and public shoreline access. That vision includes a potential bike and pedestrian path under Tukey's Bridge and bicycle and pedestrian connections at Sherwood Street, Veranda Street, and beyond. These would link to the Back Cove, Eastern Promenade, Bayside, Martin's Point Bridge, and future trail systems.



Concept sketches by Tsoi Kobus Design display the intent to build dynamic, community-rooted space.



Phasing

Before shifts in transportation and distribution networks, the site offered a competitive location for food processing and manufacturing in the 20th century. Now, the site's many compelling attributes enable the pursuit of science, education, and entrepreneurship for the 21st century and beyond. The Roux Institute Campus is envisioned as a hub for collaboration, innovation, and inspiration that contributes to the education of Roux Institute students, stimulates Maine's economy, and enriches the lives of Portlanders through the resources it offers.

While the proposed vision represents an ambitious undertaking, the entire endeavor is based on simple tenets of placemaking: provide a mix of uses, allow for creativity and entrepreneurship, and encourage recreation. This vision takes time to grow and develop. Understanding that institutional uses have phased planning horizons, this IDP considers near, medium, and long-term growth plans. The resulting phasing of the development is represented in the figure to the right.

Fortunately, the nature of the Roux Institute at Northeastern University lends itself well to phasing strategies. Corporate partnerships are a core part of the institute's educational strategy, meaning that office and laboratory partners will sit comfortably within the primary academic building during its first years, before extending outward in the longer term. As the site develops, more and more students, faculty, and employees will be drawn to live and work on site. Like any new campus, as the population of students, residents, and employees grow, so will demand for limited retail and restaurants. In addition, the expanding program needs of the campus may be supported by such uses as on site daycare, bike commuter facilities, maintenance facilities, and security offices.

The proposed vision offers a realistic framework for flexible growth. As the Roux Institute Campus evolves, and the world changes, new opportunities and needs may present themselves. Neighborhood feedback will also inform future growth. A core presence of educational, research, incubator, and partner space will provide the Roux Institute Campus with a strong start, around which additional community needs and services can thrive over time.

Anticipated Phasing (Cumulative Totals)

Building Program	Near-Term (0-5 Years)	Medium-Term (10 Years)	Long-Term (20 Years +)
Academic & Research	1,750 Students 222,000 sf.	2,500 Students 372,000 sf.	5,100 Students 372,000 sf.
Office/Lab Partners	Included in the Roux Institute	Included in the Roux Institute	200,000 sf.
Business Incubation	40,000 - 50,000 sf.	40,000 - 50,000 sf.	40,000 - 50,000 sf.
Residential	175 - 250 Units 150,000 - 200,000 sf.	350 - 425 Units 300,000 - 350,000 sf.	525 - 650 Units 450,000 - 550,000 sf.
Hotel	90,000 sf.	90,000 sf.	90,000 sf.
Retail (Restaurant, Cafe, Market, Kayak, etc.)	10,000 sf.	15,000 sf.	25,000 sf.
Totals	**512,000 - 572,000 sf.**	**817,000 - 877,000 sf.**	**1.177 - 1.287 million sf.**

Potential Phasing



At the completion of each phase, the Roux Institute Campus will be a model of comprehensive design. At least three acres of permanent, significant public space will be established early in the development of the campus to ensure public benefit. Interim features such as surface parking lots or construction staging areas will be designed to not detract from the pedestrian experience through planting, lighting, wayfinding, graphics, artwork, or fencing. Other interim areas of the site will be appropriately landscaped or accommodate gathering on lawns and hardscape spaces. Interim features such as parking lots may also be programmed with markets, festivals, or cultural events. Lighting and layout of these spaces will be considered to facilitate flexibility so that they can accommodate a variety of campus events.

Development Plan

Near-Term



Mid-Term



Long-Term



- Pedestrian
- Bike/Pedestrian
- Water Taxi
- Potential Shared Use Path Connection
- Vehicular
- Primary Entrance
- Potential Off-Ramp

Development Plans are conceptual and intended to illustrate how design guidelines and principals could potentially be implemented at this site.

Design Principles

The Roux Institute Campus will be a paradigm for 21st-century education with urban, sustainable, and resilient design. All elements of the campus will be conceived holistically to support the educational program of the Roux Institute. Near and long-term planning supports a vibrant campus environment with views and connections to the waterfront, a variety of public spaces, and site access via bike paths, walkways, and the public pier. Key principles of the design approach include:

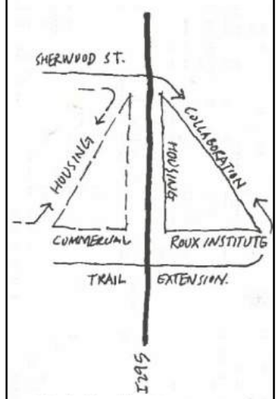
Connected to the Waterfront, Portland, & the World
- Engage the waterfront
- Promote visual and physical connectivity
- Encourage connections to the waterfront through diverse spaces
- Create a holistically built environment
- Restore, repurpose, and revitalize the Bean Building
- Create an iconic architectural expression

Places to Gather
- Welcome the surrounding neighborhood
- Foster community with shared spaces and interaction
- Build a strong association with the City of Portland
- Develop purpose-driven spaces that yield regular connections
- Provide public open space
- Provide spaces where neighbors can work and read while enjoying the campus's environment

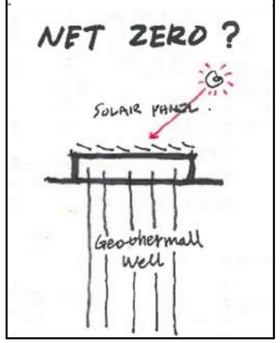
A Sustainable & Resilient Campus
- Employ sustainability benchmarking for environmental stewardship
- Incorporate state-of-the-art features, systems, and techniques
- Minimize energy consumption campus-wide
- Build for resilience; prepare for extreme weather and climate change
- Maximize green space through appropriate building height

Integrated Landscape
- Enhance access through TDM and multi-modal support
- Contribute to Portland's open space network

Welcoming the Neighborhood



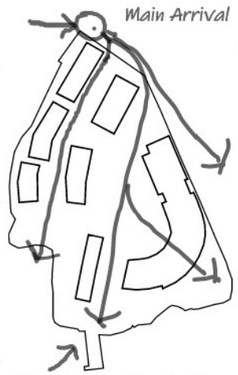
Sustainable & Resilient



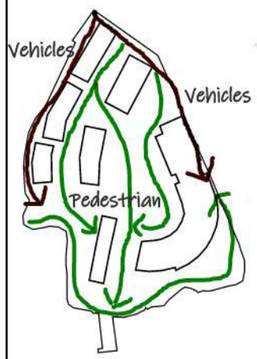
Iconic Architectural Expression



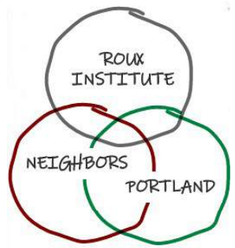
Waterfront Connections



Pedestrian Campus



Foster Community



Above: Concept sketches by Cambridge Seven and Tsoi Kobus Design

Artist Interpretation



Design Guidelines

Waterfront
- The waterfront will be publicly accessible to provide a variety of open spaces throughout all phases of development that foster social interaction.
- New principal buildings on the waterfront shall include a publicly accessible entrance to interior public space (if provided) from the waterfront side and upland side of the building along an anticipated desire line. Said interior public space (if provided) may be closed to the public during special events, outside normal operation hours, and when necessary for security or public safety purposes.

Cohesive campus
- The overall composition and experience of the campus will be considered for cohesive identity from approaches along I-295 and views from the East Deering neighborhood.

Historic preservation
- Buildings, site development, circulation, and open space will respect the B&M Cannery Building, a designated historic landmark.

Connectivity
- Prioritize the bicycle and pedestrian circulation network on campus while providing connectivity for auto, public transit, service, and emergency vehicles at each development phase.
- Surface parking lots shall be located to the maximum extent practicable toward the rear or side of a building not occupied by a principal entry to a building facing a street, public right-of-way, major pedestrian access routes, open spaces, and/or the waterfront.

Open space
- Open space will be publicly accessible to provide multiple functions for recreation, social gathering and buffers that integrate within the overall composition and experience of the campus at each development phase.

Sustainable practice
- Buildings and site development will incorporate sustainable technologies in building design, orientation, energy production and sensitivity to natural resources at each development phase.

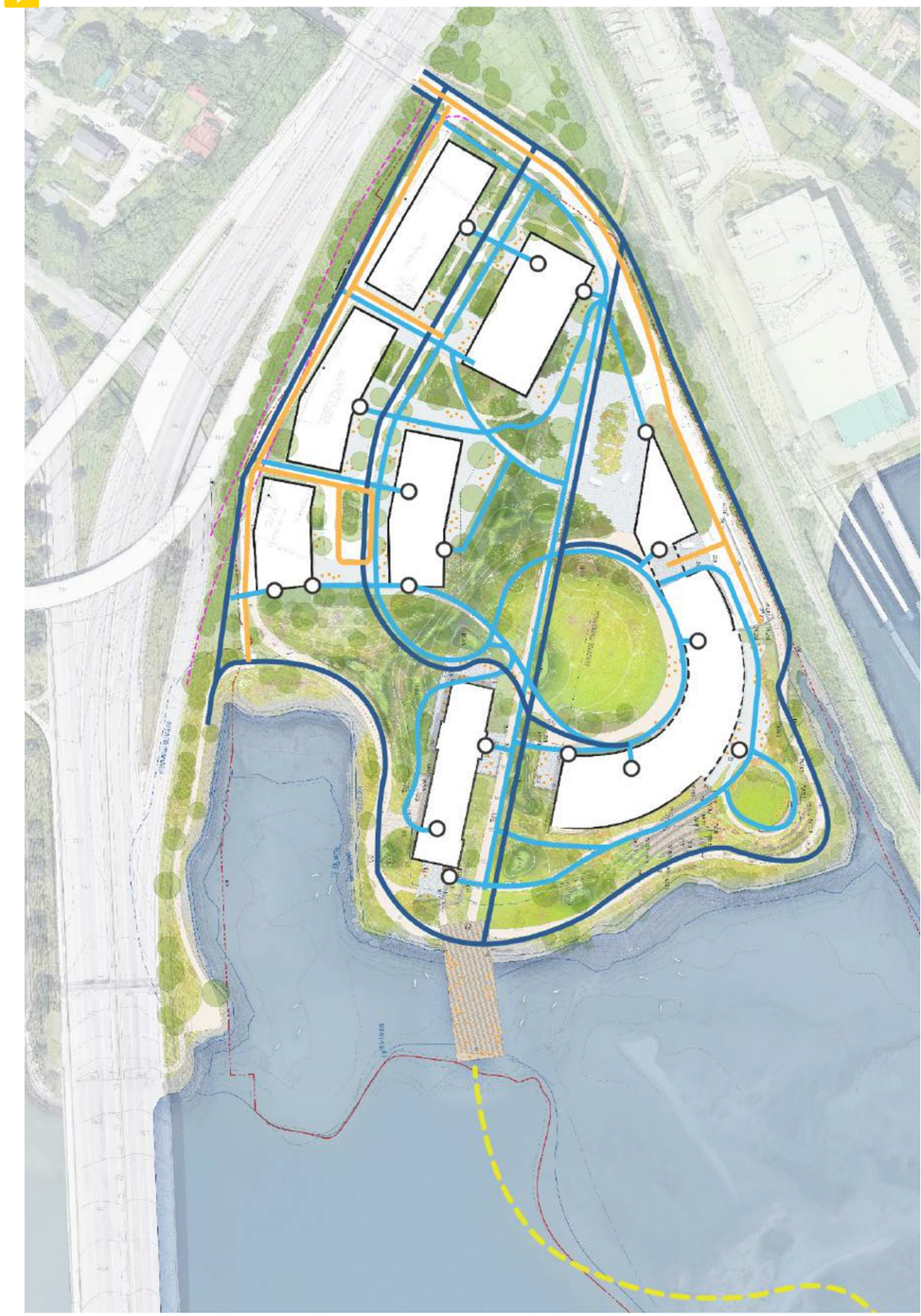
Resilience
- Buildings and site development will incorporate resilience strategies to account for flooding, severe weather events and integration of publicly accessible spaces at each development phase.

Building design
- Building facade materials will be of high quality, durable to the marine climate and contribute to an attractive public realm. The first 35 feet of building height shall complement the pedestrian character in materiality, transparency, and detailing.
- Rooftop appurtenances will be incorporated, screened, and set back from roof edges to reduce visual impact from the surrounding neighborhood.

Building entrances
- Building entrances will include prominent facades and be oriented toward, located adjacent to, or accessible from rights-of-way, major pedestrian access routes, or open spaces.

Mitigation of impacts
- Buildings and site development will endeavor to minimize potential negative impacts related to shadows, wind, noise, heat, glare, lighting, contaminants, and the environment.

Visualizing the Guidelines: Potential Long-Term Layout & Circulation



Connected to the Waterfront, Portland, & the World

Artist Interpretation



Development of a new landmark campus, with focus toward the community and the waterfront, will enhance the East Deering neighborhood. New, forward-looking campus buildings adjacent to the restored and repurposed Bean Building will update and respect its legacy. The waterfront will integrate with the entire campus through ecologically focused design. Water views from the ground and buildings will emphasize the site's uniqueness and become an integral part of the campus identity. Pedestrian/bicycle trail connections and water shuttle or taxi service will let the waterfront serve as an entrance to the campus.

Places to Gather

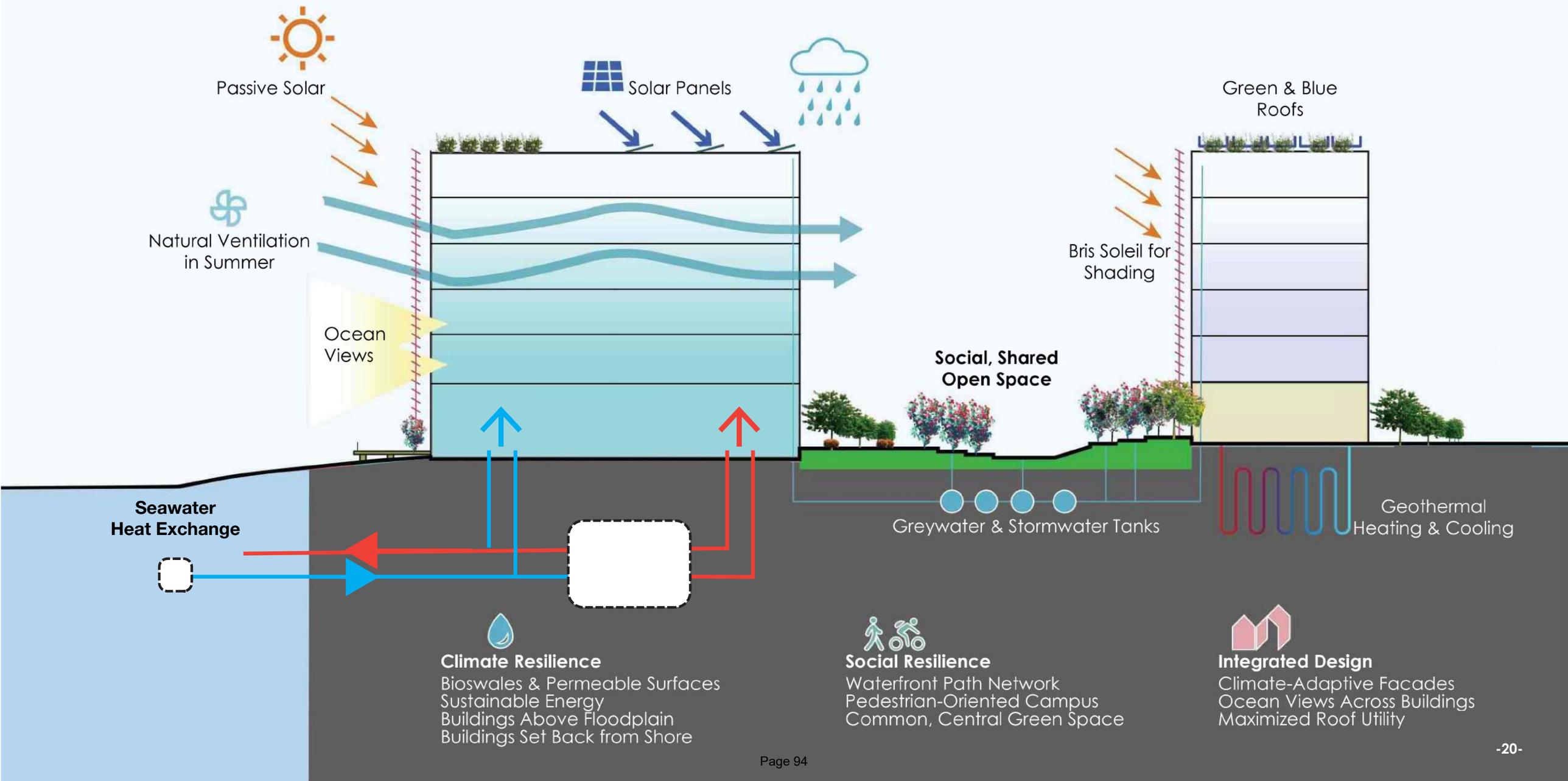
Artist Interpretation



All new buildings will connect through linking landscaped terraces with a central, pedestrian-oriented green space. The campus will maximize publicly accessible open space through building height and density. This plan will foster a mixed-use environment encouraging interaction and innovation. Internal connections are echoed by external circulation and access points (pedestrian, bicycle, public transit, potential water taxi, automobile) that further strengthen the connection with neighboring communities and the City of Portland.

A Sustainable & Resilient Campus

The Roux Institute Campus intends to incorporate state-of-the-art sustainable technologies. Examples of possible technologies (illustrated below) that will be thoroughly studied include geothermal heating and cooling, photovoltaic solar panels, high-performance building envelopes with triple glazing, green roofs, blue roofs, stormwater/greywater management, passive solar gain, sea water cooling, and natural summer ventilation. If necessary, purchase of renewable power produced off-site will supplement on-site sources. Resilience strategies like constructing buildings well above the 100-year flood zone will also be deployed to account for rising sea levels and severe weather events.



Enhance Access

The striking campus is visible from Interstate 295, as well as from its on- and off-ramps which are located nearby. US Route 1 and downtown Portland are both accessible within minutes. Via Sherwood Street, the Roux Institute Campus will connect to the East Deering and Back Cove neighborhoods. Bus routes within easy walking distance, and waterfront pedestrian and bicycle trails (including a potential new connection under Tukey's Bridge and improvements to Sherwood and Veranda Streets) will link the Roux Institute Campus to the neighborhood as well as to the Back Cove Trail, Bayside Trail, Eastern Promenade, and future trail networks. Within the site, ADA pathways and inclusive design principles will ensure the site benefits all users.

Adjacent to the Roux Institute Campus (but not on its property) is the former Grand Trunk Railway line, which could one day provide a new transportation route. Connections to Casco Bay ensure water access to the peninsula, islands, and the entire Maine coast.

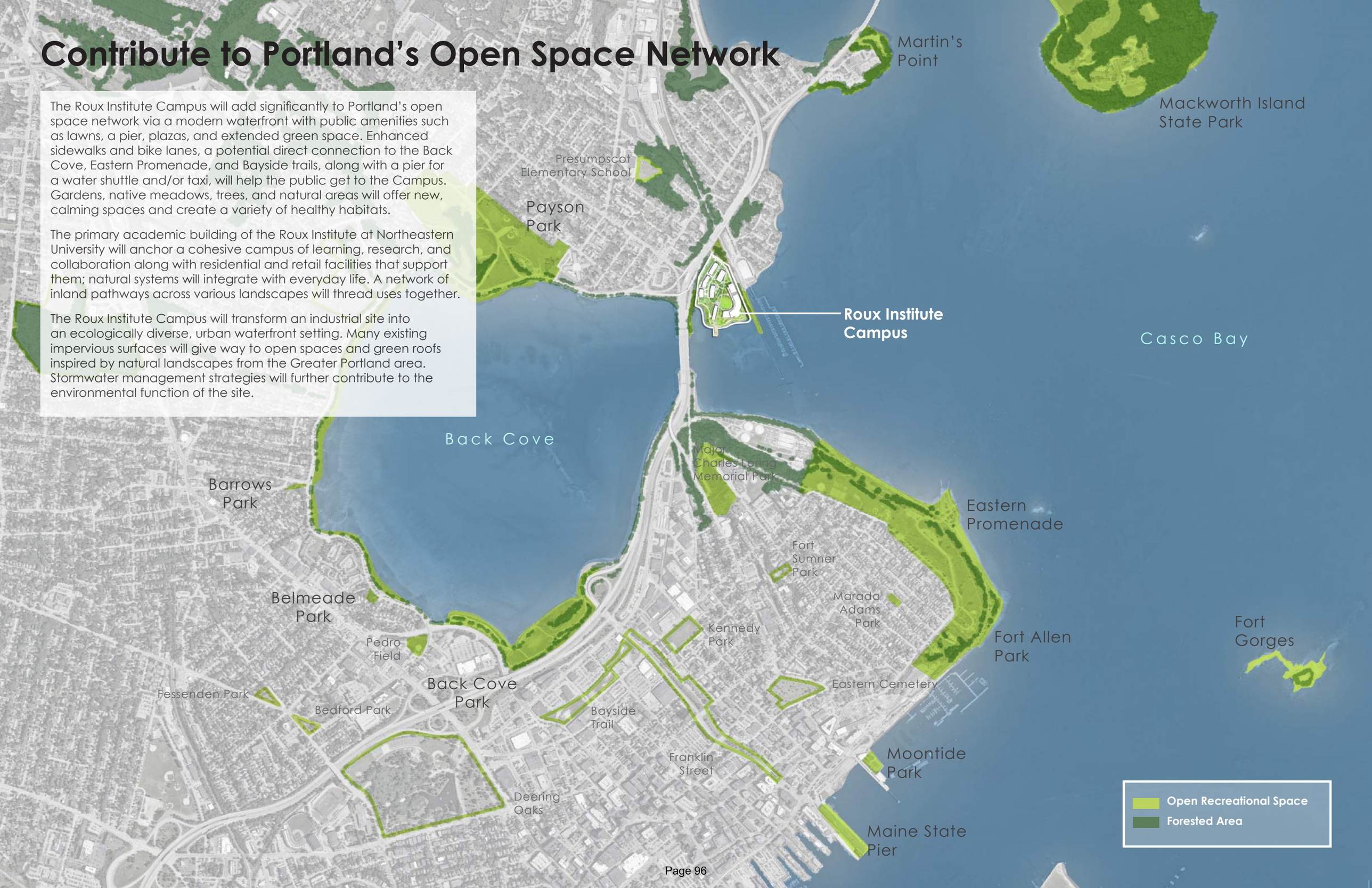


Contribute to Portland's Open Space Network

The Roux Institute Campus will add significantly to Portland's open space network via a modern waterfront with public amenities such as lawns, a pier, plazas, and extended green space. Enhanced sidewalks and bike lanes, a potential direct connection to the Back Cove, Eastern Promenade, and Bayside trails, along with a pier for a water shuttle and/or taxi, will help the public get to the Campus. Gardens, native meadows, trees, and natural areas will offer new, calming spaces and create a variety of healthy habitats.

The primary academic building of the Roux Institute at Northeastern University will anchor a cohesive campus of learning, research, and collaboration along with residential and retail facilities that support them; natural systems will integrate with everyday life. A network of inland pathways across various landscapes will thread uses together.

The Roux Institute Campus will transform an industrial site into an ecologically diverse, urban waterfront setting. Many existing impervious surfaces will give way to open spaces and green roofs inspired by natural landscapes from the Greater Portland area. Stormwater management strategies will further contribute to the environmental function of the site.



3. Creating the Path Forward

Artist Interpretation

Assessment of Growth

The City's Land Use Code establishes content requirements for Institutional Development Plans, including considerations of transportation, environment, infrastructure, design, and neighborhood engagement. The following pages apply these lenses to the Roux Institute Campus, how they interact, and the opportunities they create.

Transportation
With one vehicle entry point, the development must be properly planned to minimize impacts on the surrounding street network. Reductions in trip generation through complementary on site uses, alternative modes of transportation, and transportation demand management are crucial.

Infrastructure
Any development is limited by the capacity of nearby utilities infrastructure. Fortunately, the site's previous industrial demands dovetail nicely with the needs of a mixed-use development. High-performance buildings can help reduce further infrastructure demands.

Environment
One compelling aspect of the Roux Institute Campus is the waterfront location; yet decades of production and transportation-oriented industrial use diminished its ecological function. Thoughtful redevelopment will restore some of this function over time.

Design
While the Roux Institute at Northeastern University seeks to inspire aesthetically, the Roux Institute Campus will be designed with neighborhood context and nature in mind. It can serve as a proving ground for best practices in ecological and urban design.

Neighborhood Engagement
The Roux Institute at Northeastern University cannot thrive without the support and goodwill of its neighbors. By establishing and maintaining community engagement, the organization will incorporate fresh ideas and build trust.

The environment of the site influences its design. That design leads to higher or lesser demands on transportation networks and utility infrastructure, which in turn impact the environment. Underlying the entire process is neighborhood engagement, without which the Roux Institute at Northeastern University cannot succeed.

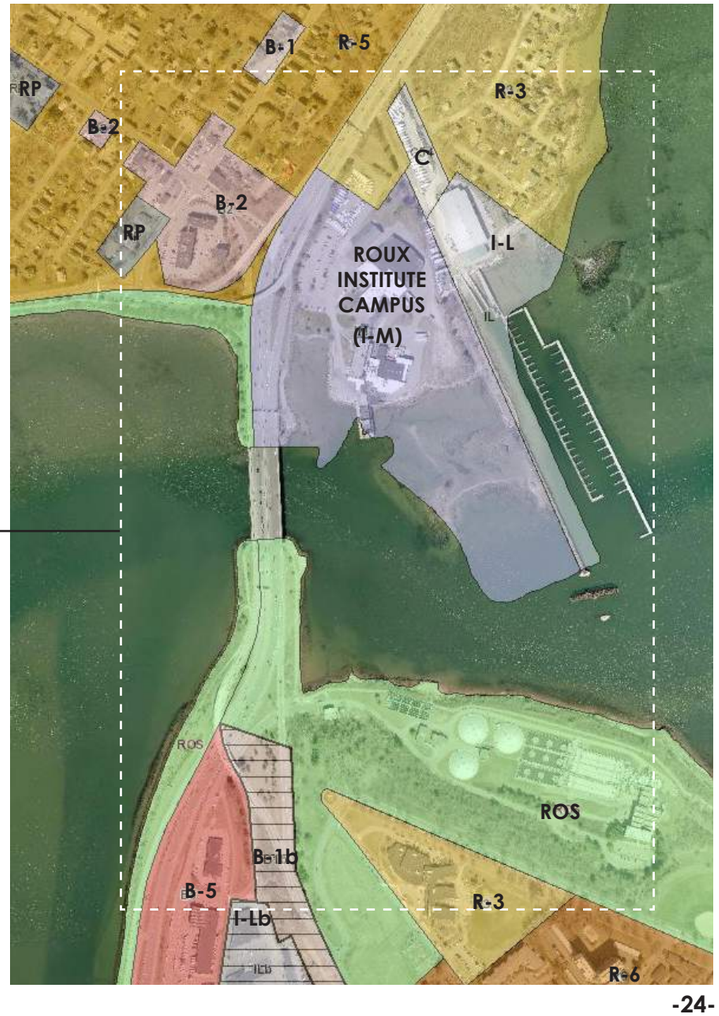
Boundary of Proposed B-5 & IOZ



The proposed Roux Institute Campus aligns well with the B-5 (Urban Commercial) purpose statement in the City of Portland's Land Use Code:

"To provide areas of the peninsula* near the downtown where a mixture of uses, including marine, industrial, commercial, and residential, is encouraged. The B-5 and B-5b zones are characterized by larger underdeveloped lots with great potential for denser, clustered, urban mixed-use development and more efficient reuse of existing land and buildings. It is anticipated that the dense, mixed-uses of the B-5 and B-5b zones will rely on a shared infrastructure system, including service alleys, parking lots, public transportation facilities, stormwater management, and driveways."

**Per the City of Portland's Land-Use Code, "on-peninsula" is defined as all land south of I-295. The proposed Roux Institute Campus is south of I-295.*



Transportation

The Roux Institute Campus is well-situated to several major thoroughfares, including I-295, US Route 1, Washington Avenue, and Baxter Boulevard. The site has a single access point, located on Sherwood Street; that access will continue to provide vehicular access in and out of the site in the future. Access to Sherwood Street is provided via Veranda Street which connects to Washington Avenue, I-295, Baxter Boulevard, and US Route 1.



The intersection of Washington Avenue and Veranda Street is critical. Traffic from I-295, Baxter Boulevard, and Washington Avenue all travel through it to reach the site.

Washington Avenue accommodates all users, with traffic using two lanes in each direction south of Presumpscot Street, one lane in each direction north of that point, and buffered bike lanes north of Presumpscot. Bus routes run along Washington Avenue and pedestrian accommodations are present, including sidewalks. In addition, the traffic signal system along Washington Avenue is a traffic responsive system operating with high efficiency. Intersections of Washington Avenue at Veranda Street, at Presumpscot Street, and at Ocean Avenue are each signalized intersections with pedestrians processed concurrently to traffic.

Veranda Street accommodates vehicular traffic with a single lane in each direction. Sharrows (faded) indicate that bicycles share the travel lane. Sidewalks are provided on both sides of Veranda Street and transit stops are present. Sherwood Street is a two-way roadway that is not striped and allows parking. Sherwood Street intersects Veranda Street to form a slightly offset four-way intersection. Both Sherwood Street approaches are stop-controlled at Veranda Street as well as Presumpscot Street.

Bates Street extends from the intersection of Washington Avenue and Veranda Street toward Baxter Boulevard, and consists of a vehicular traffic lane in each direction and a bike lane from Washington Avenue to Baxter Boulevard. A sidewalk runs along the west side of the street, but narrows and is periodically blocked by utility poles. A single lane in each direction at the intersection of Bates Street and Baxter Boulevard provides access north on I-295. Access south on I-295 is via a two-lane connection in each direction at the intersection of Washington Avenue at Veranda Street and Bates Street. This widens at Washington Avenue for turn lanes.

Adjusted Traffic Volumes at Washington Avenue and Veranda Street (2021)

Approach	Movement	AM Peak Hour Volume	PM Peak Hour Volume
Veranda St. Southbound	Left Through Right	130 65 50	70 95 60
Washington Ave. Eastbound	Left Through Right	35 1195 65	50 995 90
Veranda St. Northbound	Left Through Right	65 45 160	65 95 155
1-295 Exit Ramp Westbound	Left Through Right	100 650 80	150 1090 190

Several high crash locations (segments or intersections with eight or more traffic crashes and a critical rate factor exceeding 1.00 over the most recent three-year period) are located near the campus:

Intersections (with Crash Totals)
Washington Ave. at Randall St. (8)
US-1 at Veranda and I-295 Ramps (14)

Segments (with Crash Totals)
Washington Ave. I-295 NB Exit 8 to Veranda St. (12)
Washington Ave. from Veranda St. to Galvin St. (11)

From 2019 to 2021, one fatal crash occurred within the study area at the HCL location of Veranda Street/US-1 with the I-295 SB On-Ramps. The crash was determined to be caused from a driver running a stop sign. Safety improvements are being made as a part of the Veranda Street Bridge Replacement project.

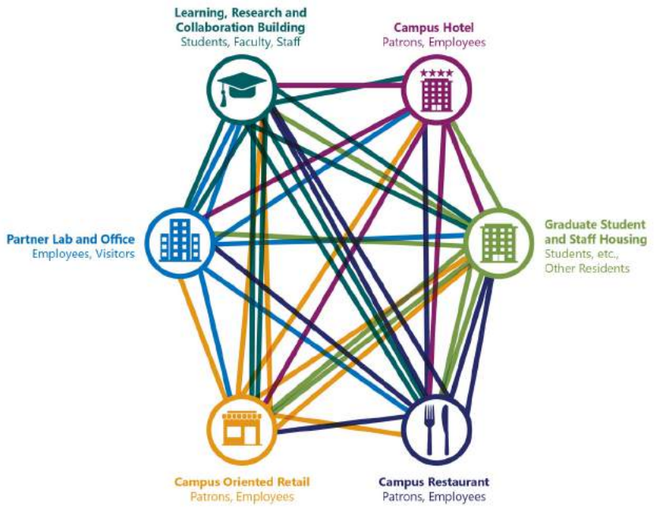
With adequate sight distance, the crashes along Washington Avenue, including at Randall Street, may be attributed to vehicles changing lanes or attempting to turn in or out of side streets where adequate gaps are not available due to congestion. There were no reported pedestrian crashes at the HCL locations. Three bicycle crashes occurred in the study area: one each at the intersections of Washington Avenue/Bates Street/ Veranda Street, Bates Street/Baxter Boulevard, and Washington Avenue/Churchill Street.

Trip Generation

The site is currently closed and therefore does not generate any existing vehicular, bicycle, pedestrian, or transit trips to and from the site. Future trip generation was evaluated using standard rates and Maine DOT guidance for the long-term development of the site. Trip generation rates were obtained from the Institute of Transportation Engineers Trip Generation Manual, 11th Edition, where available. Input was received from the City of Portland regarding appropriate land use codes, specifically for the restaurant component. In addition, because the land use code for university/college does not reflect the type of institution proposed here, VHB developed a trip generation methodology based on the anticipated populations at the site.

Relevant uses for the Roux Institute Campus include general office building (LUC 710), multi-family housing mid-rise (LUC 221), high-turnover sit-down restaurant (LUC 932), strip retail plaza (LUC 822), and hotel (LUC 310). As a mixed-use development, many trips will occur between destinations on the campus. Students, faculty, and staff will eat in on-site restaurants and shop at on-site retail stores. Some students and staff will live in the residential units or work in the office space. Partner employees may travel between offices, university buildings, restaurants, and stores.

Inclusion of ancillary uses on the campus, such as housing, hotel, office space and retail, will reduce the number of external trips to the site; internal trips will not generate external traffic or impact the adjacent road network. For traffic generation purposes, internal trips are separated from total trips estimated using engineering standards. The overall internal trip capture across the land uses for this development were estimated to be approximately 28% in the AM peak hour and 22% in the PM peak hour for the IDP full build program. Detailed trip tables are provided in the Transportation Appendix C.



Vehicle Trip Assignment
Vehicle trips were assigned to area roadways by estimating the proportion of trips arriving or leaving on each approach to the area. Estimates were based on data from several sources, including population density maps and US Census Journey to Work data. The process was repeated using catchment areas of various sizes, with minimal change in results. Trip distribution for people within a commuting distance of the site is shown in the adjacent top graphic.

Approximately 50% of trips are anticipated to travel from the south to reach the site and 15% are anticipated to approach from the north. (The thicknesses of arrows are scaled to indicate the share of trips that will use that route.)

Anticipated distribution of vehicular trips on neighborhood streets is shown in the adjacent bottom graphic. Almost 90% of trips are expected to travel through the intersection of Washington Avenue and Veranda Street. However, to access I-295 southbound, some drivers may choose instead to exit by taking a right and traveling up to the southbound on-ramp.

Additionally, approximately 20% of the site traffic is oriented to points west /southwest along local roadways or to and from the north on I-295; this will impact the intersection of Bates Street and Baxter Boulevard.





Mode Share
As indicated above, the existing site in not operational, so there are no regular trips visiting the site from any mode. The East Deering Neighborhood is served by multiple bus routes and, at many locations, features a pedestrian network and bicycle network. With improvements to these resources, the campus will be well suited for trips by modes other than single-occupant vehicles. The Roux Institute Campus is committed to working with Portland METRO to support increased transit opportunities to and from the campus area. These factors, in addition to a Transportation Demand Management (TDM) plan, will reduce auto mode share at the site.

The existing Roux Institute Campus population was surveyed in August 2022 to estimate existing campus mode shares. The survey revealed that 23% of the Roux population is currently using alternate modes of travel with 13% walking, 4% using transit and 6% bicycling. With a more aggressive TDM program, as envisioned at the site, as well as investment in pedestrian, bicycle and transit opportunities, much higher percentages of non-auto trips may be reached.

A transportation engineer developed target mode shares for each envisioned Roux Institute Campus land use, in consultation with City of Portland and Maine Department of Transportation officials. These shares were applied to external trips to determine the likely number of trips by each mode, yielding the estimates in the table at right.

Estimated Mode Split (%)

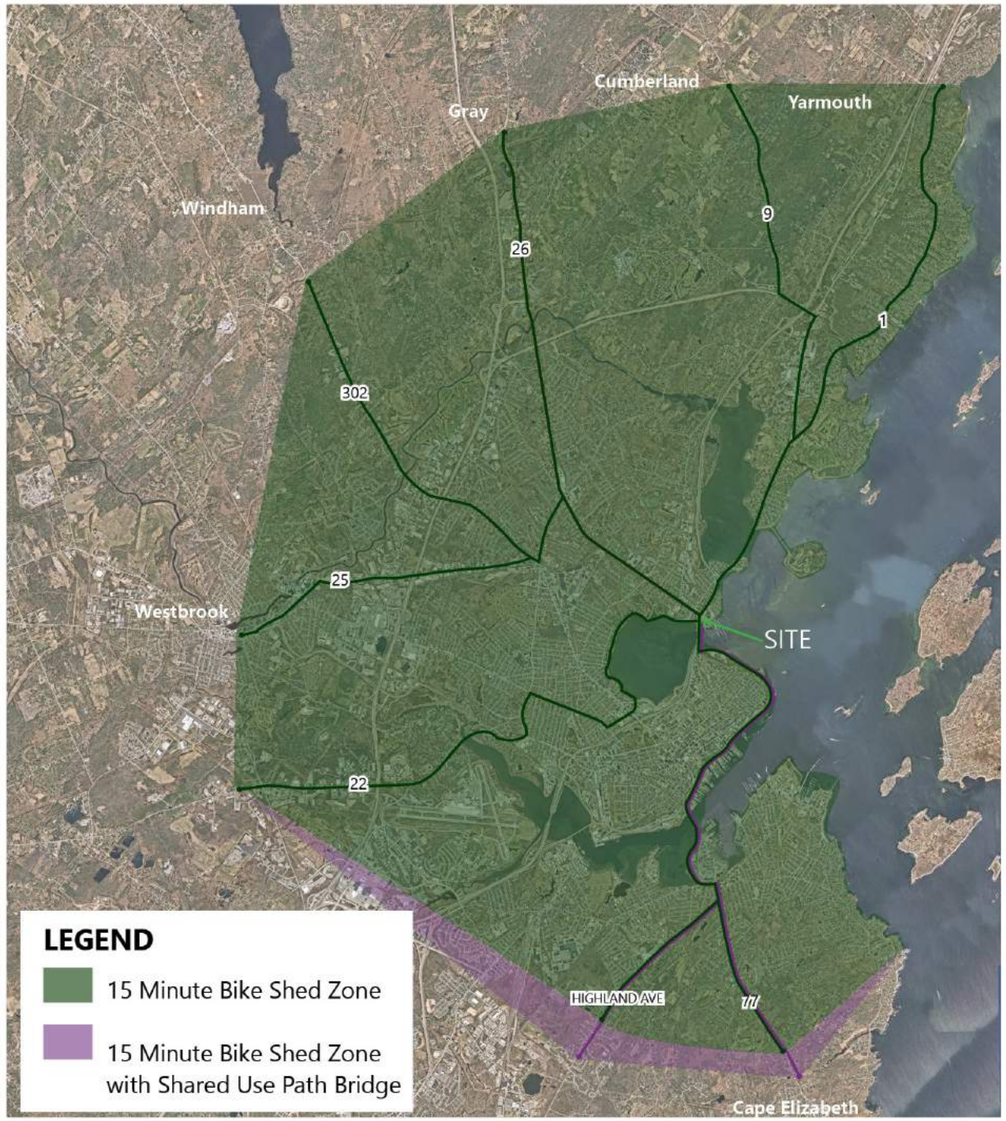
Land Use	Transit	Ped. & Bike	Vehicle	Carpool Rider
Office	10	10	75	5
Retail	10	50	40	0
Restaurant	10	50	40	0
University	10	20	65	5
Residential	10	20	65	5
Hotel	10	10	75	5

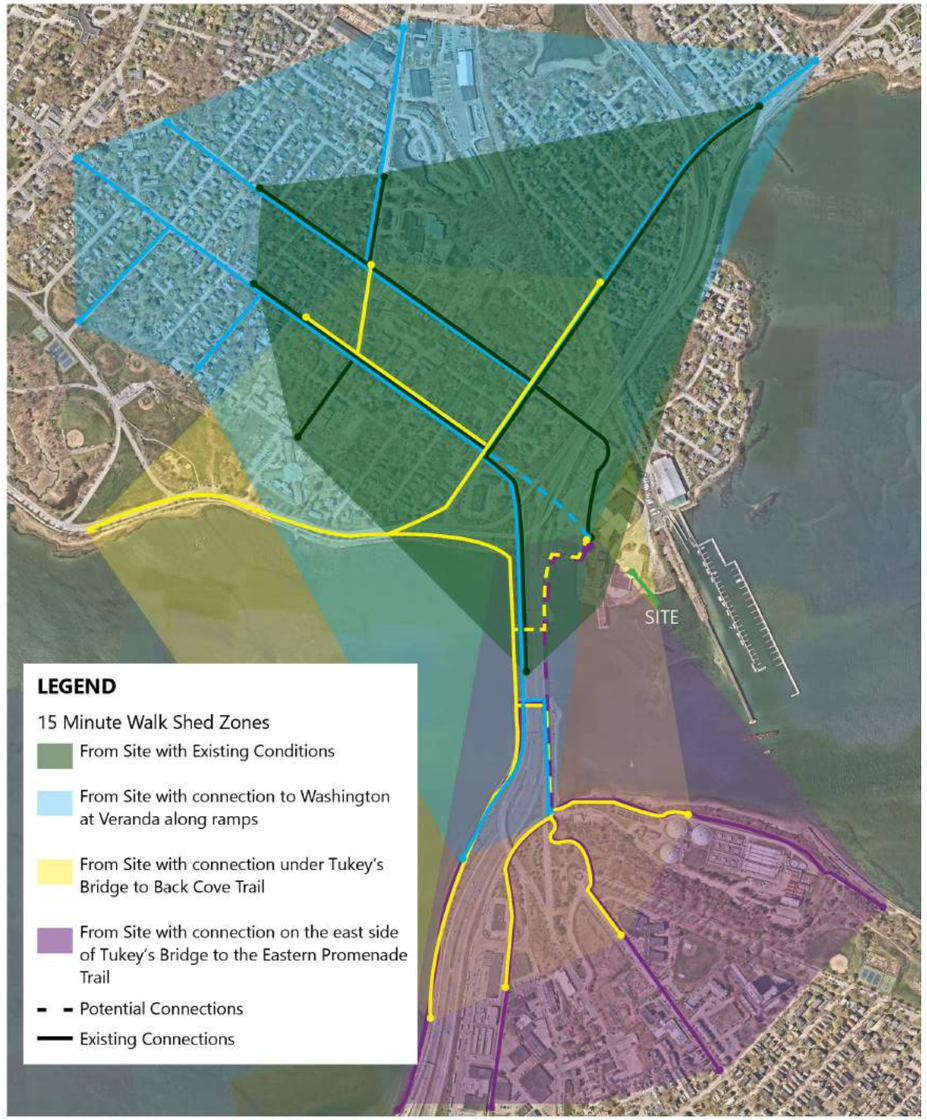
Transportation Improvement Opportunities

Bicycle and Pedestrian Connection Opportunities
The existing bicycle and pedestrian network includes known constraints along the existing bicycle and pedestrian route across Tukey's Bridge. The sidewalk connecting from the intersection of Washington/Veranda is narrow and adjacent to vehicular traffic on the ramp to I-295. Then this walkway meets the Back Cove Trail which adds bicycle and pedestrian demand to a narrow shared use path over Tukey's Bridge which according to Portland Trails data carries an average of 1300 to 1400 daily trips during the summer months. Current pedestrian and bicycle demand in the study area is low. During the PM peak hour for example, only 6 pedestrians and 6 bicyclists traveled along Veranda Street crossing either leg of Sherwood Street. Similarly, only a total of 20 pedestrian crossings were reported across all legs of the intersection of Washington Avenue and Veranda Street during the PM peak hour during turning movement counts collected by VHB in 2021.

Improvements to bicycle and pedestrian connections will increase those mode shares for the site and Infrastructure improvements can alleviate some neighborhood traffic impacts. Two opportunities stand out when considering bicycle and pedestrian improvements.

The first is an improved connection between the Back Cove Trail and Washington Avenue. At present, users of the Back Cove Trail face a 90-foot mid-block crossing to reach the northwest side of Bates Street. Converting the intersection of Bates Street and sweeping right-turn maneuver would create a shorter, safer crossing. The second improvement is a direct connection from the Roux Institute Campus to the existing trail network, either by extending the shared-use path below and alongside the north end of Tukey's Bridge or by a shared use path on a new bridge parallel to Tukey's, or both. The site walkshed and bikeshed distances, or typical distances that people are comfortable choosing alternate modes, increase to points south with these connections, increasing the opportunities for bicycle and pedestrian trips and improving the overall bicycle and pedestrian network.





The Roux is committed to working with the City and MaineDOT to provide additional bicycle and pedestrian capacity to accommodate future demand. A Traffic Movement Permit will be required for each phase of the project. At that time, actual mitigation will be tied to the impacts that are anticipated at that time.

Transportation Improvement Opportunities (continued)

Parking Demand and Capacity
Parking will be built over time as part of the development program. All vehicular trips are intended to park on site. As demand increases during the phased development, parking will be introduced incrementally to avoid excess supply and inadvertent encouragement of driving to the site.

Base parking demand (calculated for each hour of the day using ITE Parking Generation Manual rates, 5th Edition, and the same land use codes as for trip generation) indicate that total parking demand across all uses on the site will peak at 4 PM. At completion of the near-term phase of development, parking demand is expected to be approximately 700 vehicles. Demand at full build-out could be as high as 1900 vehicles, inclusive of day users and residents with goal mode shares. All on-site parking is intended to be communal; availability in the closest lot to a destination will not be guaranteed. Additionally, uses with opposing peak parking demands will be able to share parking resources.

All on-site parking will be paid parking, and a parking office will be created to handle permitting and enforcement for the campus. Parking costs and regulations may vary between categories of users (students, staff, residents, office tenants, visitors, etc.). The Roux Institute Campus may include on-site car share, enabling travel to and from the site using other modes, with the comfort that vehicles are available if necessary.

The parking numbers are estimates based on target mode shares and the currently contemplated building program. As the site is developed, Site Plan Review and Traffic Movement Permits will be required that will involve monitoring and reporting on traffic and parking. Based on monitoring results and TDM measures included in these submittals, the parking demand and ultimately supply will be determined so that the site is properly parked for the context at that time. As stated in the Land Use Code, the Planning Board will establish the off-street parking requirement based on a parking study. The Roux Institute is actively pursuing strategies with the City of Portland to prevent on-street parking by campus visitors.

Public Transit
Two bus lines currently stop near the site: METRO Route 7 and METRO Routes 9A/9B. These routes provide direct connections to the peninsula, North Deering and Falmouth. With a transfer at any of the Downtown Transfer Centers, riders can reach the rest of Portland and Greater Portland Region.

Buses run continuously throughout the day, readily accommodating the varied schedules of students and other campus users. METRO BREEZ express bus service to Yarmouth, Freeport, and Brunswick and the Husky Line to Westbrook and Gorham establish a regional footprint for transit service. Ten local and express routes connect the campus to most of the Portland area with no more than one transfer.

The monthly ridership on the Metro Route 7 is one of the lowest in the Metro system. In 2021, on the average weekday, there were 2521 boardings on Route 7. Each bus has the capacity of approximately 30 people and the bus runs 13 times per weekday inbound and outbound or a monthly capacity of approximately 7800 boardings, which leaves plenty of capacity on Route 7 to accommodate site related traffic.

The Roux Institute Campus is working with METRO to improve the quality and frequency of transit connections to the Roux Institute Campus. Reduction of headways on Route 7, creation of a new route that ends at the Roux and travels through the Peninsula, and construction of a transit stop and turnaround for either service to travel into the site, furthering the convenience of transit as a mode of travel are all being considered.

In addition, the Roux Institute at Northeastern University will promote and incentivize transit use by subsidizing transit passes for students, staff and faculty.



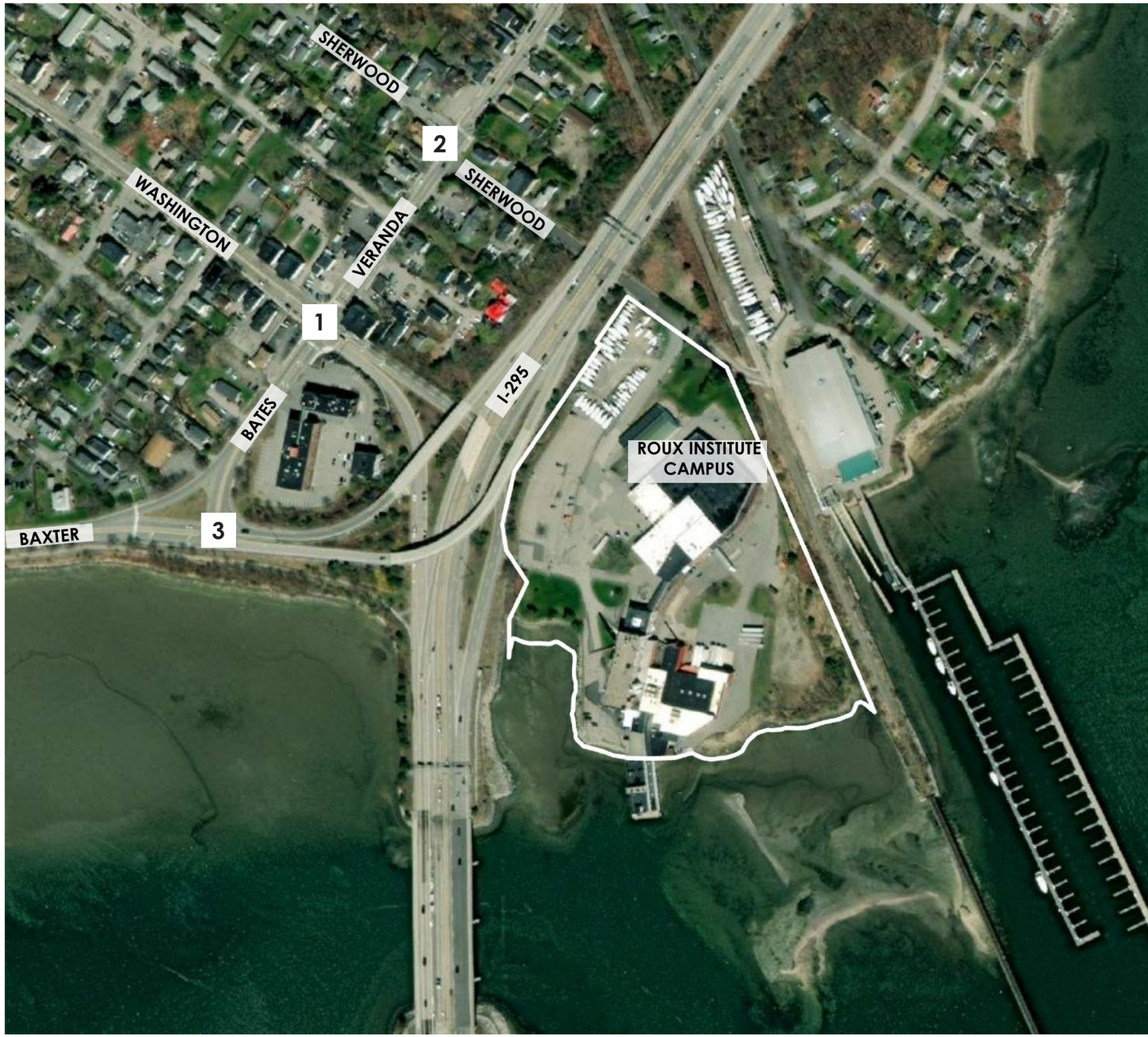
Transportation Improvement Opportunities (continued)

The Roux Institute Campus is constrained on three sides by the Bay, I-295, and a rail line, with Sherwood Street as the access road. The campus's vehicle traffic will be highly concentrated on certain streets and intersections immediately surrounding the site. Targeted roadway improvements at these locations can increase capacity and prevent excessive congestion.

These improvements are not tied to specific years or development phases. They are held out as potential mitigation measures to be considered as future traffic warrants. As development continues, the Roux Institute will apply for traffic movement permits (TMP). Potential improvements will be evaluated during the TMP process in collaboration with the Maine Department of Transportation and City of Portland.

1. Vehicles exiting the campus via Sherwood Street may turn right or left on Veranda Street to access I-295 South. The left turn lane from southbound Veranda Street to Washington Avenue currently has a storage length of only 130 feet. At higher traffic volumes, the line of vehicles waiting to turn left may extend beyond this length, delaying through and right turning vehicles from reaching the intersection. If this type of congestion becomes frequent, it may be mitigated by extending the left turn lane further back. This will require widening Veranda Street between Washington Avenue and Sherwood Street within the existing right-of-way. Widening on Veranda Street would also allow bicycle lanes to be added. This impact will also be reduced through use of signs indicating that I-295 South can also be readily reached by turning right and using the Veranda Street on-ramp.
2. With 100% of campus traffic traveling through the intersection of Sherwood Street and Veranda Street, improvements may become necessary. The intersection is currently controlled with a stop sign on Sherwood Street. To improve traffic flow, Sherwood Street could be widened at the intersection within available city right-of-way to separate outbound traffic into left and right turn lanes. A bicycle lane could also be added within this space. This would substantially increase capacity on the Sherwood Street approach. If traffic volumes eventually exceed this new capacity, a traffic signal could be installed at the intersection.
3. Vehicles approaching the campus from I-295 southbound will exit at Baxter Boulevard and make a right onto Bates Street. There is a significant unused right of way on Bates Street between Baxter Boulevard and Veranda Street that could be repurposed to increase capacity. Another northbound turn lane could be added (isolating left, through, and right movements) at the intersection as well as adding a bike lane. A bike lane would also have the benefit of completing the trail connection from the Back Cove Trail. The intersection of Washington Avenue, Veranda Street, and Bates Street may eventually need other mitigating measures to increase capacity, such as reconfiguring lanes on the I-295 exit ramp approach.

A potential timeline has been developed and is provided in the Transportation Appendix for when the improvements described above may be implemented if development proceeds as currently anticipated and goal mode shares are met. As the site is developed, Site Plan Review and Traffic Movements Permits will be required that will involve monitoring and reporting on traffic and parking. Based on monitoring results and Transportation Demand Management (TDM) measures included in these submittals, the parking demand and ultimately supply for each phase will be determined so that the site is properly parked for the context at that time. As stated in the Land Use Code, the Planning Board will establish the off-street parking requirement based on a parking study.



Managing Transportation Demand

Active Transportation
In addition to the transit options in the study area, the Roux Institute Campus development will benefit from existing pedestrian and bicycle infrastructure. Sidewalks are in good condition and pedestrians are accommodated at signalized intersections with crosswalks and concurrent pedestrian signal phasing. Future visitors will benefit from upgraded pedestrian accommodation along Sherwood Street. Once on the site, pedestrian connections will link site uses and points along the waterfront.

The Roux Institute Campus can promote human-powered trips to the site through improved connections to this infrastructure. The area is densely populated, bicycle lanes are provided along Washington Avenue and other roadways, and the Back Cove Trail is nearby. In the future, cyclists will be accommodated on Veranda Street and into the site on Sherwood Street via dedicated bicycle lanes.



Transportation, Access, and Circulation Plan

Multi Use Path
Shared Lanes
Bike Lanes Two way
Neighborhood Byways
Bike Lanes One Way
Paved Shoulders

Transportation Demand Management (TDM)
TDM programs seek reductions in traffic impacts by subsidizing and marketing alternative commute options. Northeastern University plans aggressive targets of non-single occupant auto trips and intends to limit on-site parking - the goal is a 37 percent reduction in automobile trips from ITE Trip Generation predictions, and a minimum of 20 percent reduction in parking demand compared to anticipated ITE Parking Generation. As mixed uses are created during development, internal trip-making will increase, and these targets may be revised.

Transportation Coordinator: Northeastern University plans to follow industry best practice by appointing a campus-wide transportation coordinator. This person will collect data on the TDM program to ensure it evolves as the site develops. Once aspects of the site are operational, they will conduct a transportation survey to establish a baseline for future trip reduction goals. They will also collect and disseminate information (including non-automobile travel options) among the employers and facility managers on site to encourage TDM participation.

Public Transit Support: Northeastern University intends to partner with Portland METRO to subsidize shorter headway service to the Roux Institute Campus. Student subsidies will enable frequent and reliable service to and from the site.

To further support trips via public transit, the Roux Institute at Northeastern University intends to subsidize bus trips for students and employees (for employees, their purchase can also be included as a pre-tax benefit). Lease agreements will encourage transit pass subsidies by other on-site employers.

Carpools: Northeastern University will prioritize parking for carpools near building entrances. The transportation coordinator can facilitate carpools by maintaining a database of interested parties; commuters may be matched with others who live near them or can access a park-and-ride location along their route. The coordinator can also participate in the Maine DOT commuter resource program, which facilitates carpools across nearby sites and provides participants with rewards for carpooling.

Parking Fees: Paid parking is intended to be shared across uses on the Roux Institute Campus, not guaranteed in individual lots.

Bicycle Travel: Northeastern University will support active transportation by investing in complete streets and trail connections, bike storage, and shower facilities and lockers.

Water Travel: Northeastern University plans to build a modern pier over the footprint of the current pier, in order to accommodate water shuttles and taxies, and those accessing the site and commuting by boat.

Monitoring: Northeastern University will monitor transportation to the campus in order to ensure that mode share goals are being met and shall make adjustments as necessary to achieve such goals established in the applicable TDM or TMP.

Transitions

With I-295 to the west, state-owned vacant parcels to the north, the rail corridor and marine business to the east, and Casco Bay to the south, the Roux Institute Campus is surrounded by existing areas of transition from the campus to the surrounding neighborhoods. In addition to the existing buffers, development will further ease the transition to and from the campus through the following design methods.

Between Site Entrance & Campus
Public open space will ease transition from the smaller scale of Sherwood Street. Views to the water and the Bean Building, and clear wayfinding and circulation of pedestrian and bicycle pathways, will welcome site visitors further into the campus. A smooth transition will also be accomplished through thoughtful facade design at the pedestrian level. Potential nuisance features like dumpsters, air handlers, and parking will be appropriately screened. Buildings will avoid blank walls to respect the adjacent neighborhood and facilitate a sense of permeability and welcome.

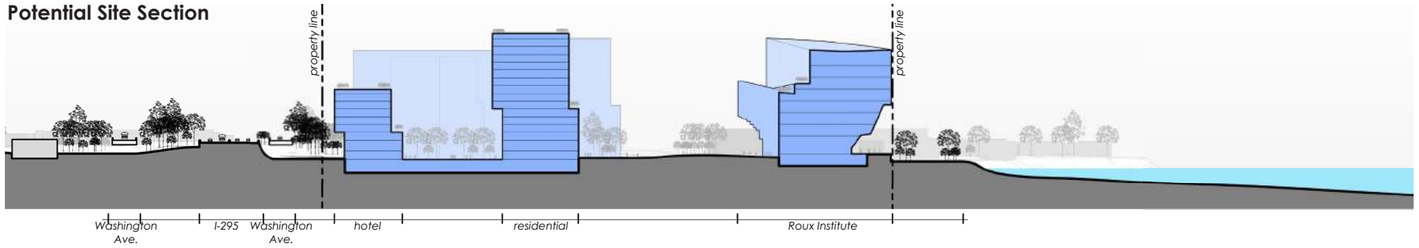
Between Buildings & Campus
Building entrances will face major public spaces or circulation paths. Lower stories will be programmed for activation where they meet the pedestrian realm or feature visually interesting details and activities related to the building. Building articulation, massing, and materials will contribute to the sense of a well-textured, connected campus.

Between Campus & Water
The shoreline area between the buildings and the water will serve as meaningful public open space. This open space will contain a combination of pedestrian and bike trails, passive and active gathering spaces, restored and ecologically improved landscape and shoreline to anchor the site's relationship with the water. Building facades facing the water will be considered public-facing, with views designed for interest from the water and Eastern Promenade Trail.

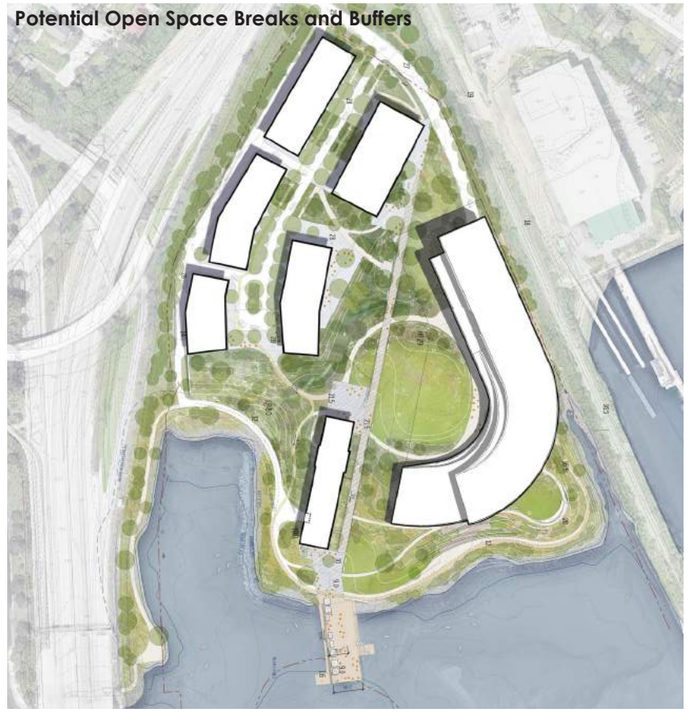
Crime Prevention Through Environmental Design (CPTED)
Key to these successful transitions is a sense of welcome, comfort, and safety. To ensure this, the campus will incorporate the following CPTED design strategies demonstrated to deter crime:

- Mixed use, multi-tenant 24-hour campus that generates "threshold capacity" for a diversity of places, people, and programs
- Ecologically restored, biophilic and publicly accessible campus connected to the wider community
- Highly durable, vandal-resistant materials in the public realm to communicate a well-maintained, clean campus
- Systematic, clear, and appropriately scaled wayfinding to guide and inform all transportation modes and user groups
- Matrix of pedestrian and bike paths connecting well-lit transit stops, bike storage areas, and parking areas to maintain clear sight lines
- Street-level building elevations designed for visibility, minimizing hidden corners and spaces
- Transparency and openness of buildings at ground levels and entrances to connect with the public realm and create pathways
- Controlled campus access points for special events or emergencies

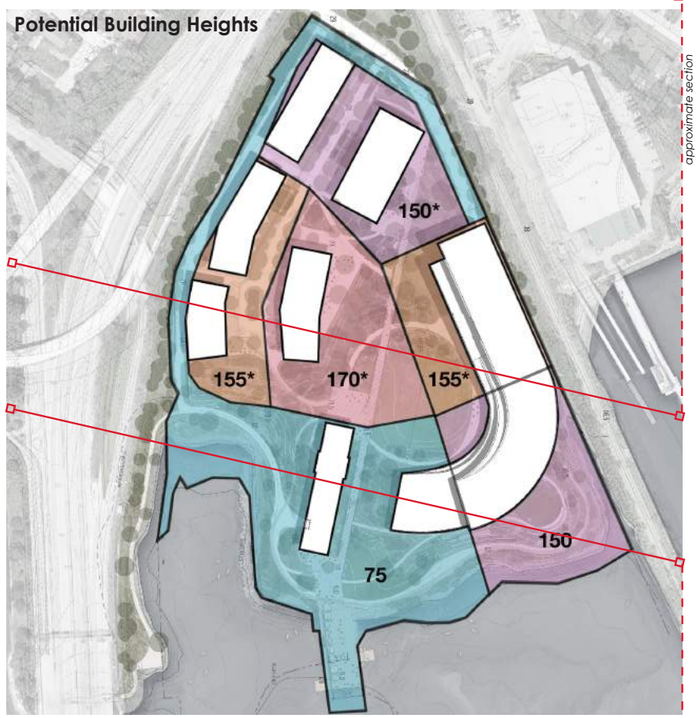
Potential Site Section



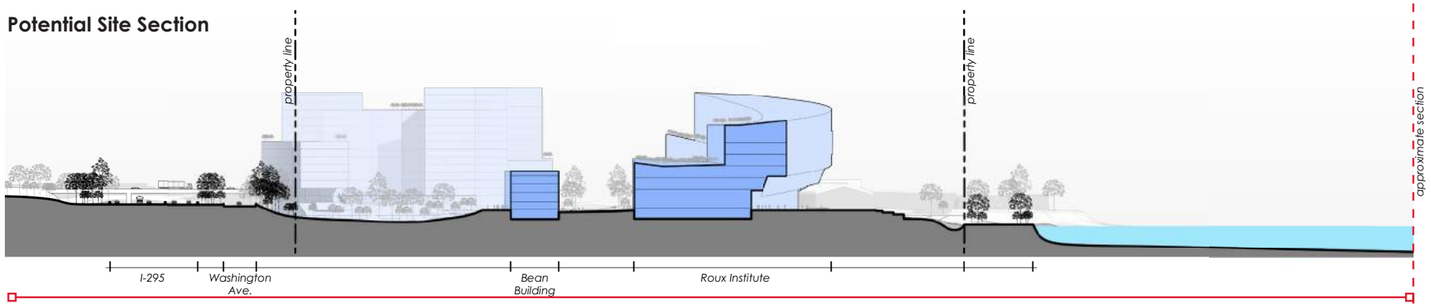
Potential Open Space Breaks and Buffers



Potential Building Heights



Potential Site Section



As campus growth occurs, measures appropriate to each phase will be implemented and scaled to the Institute population and site usage. These measures may include such things as increased lighting, emergency phones, maintenance of clear sight lines, additional wayfinding and attention to spaces between buildings to ensure the governing CPTED principles are maintained.

Safety & Environment

Strengthening Resilience & Ecology
The site is roughly 75% impervious with approximately 10 acres of building roofs, parking areas, and loading dock space. Minimal shoreline buffer is present at the site, with pavement extending right up to the armored embankment along much of the shoreline. Existing site grades adjacent to the Bean Building are only 1-foot above highest astronomical tide. In recognition of these existing vulnerabilities and with a desire to improve ecological function for the site, the redevelopment will raise interior site grades and soften landscapes to reduce impervious area and increase flood resilience.

Energy Consumption
The development presents an opportunity to mitigate energy consumption through high performance building envelopes, particularly with the likely southern exposure of the Academic/Research building. Similarly, we intend to explore and hopefully incorporate renewable energy sources such as active and passive solar, sea water cooling, and/or geothermal. A sustainability charter will be developed for the campus prior to the first site plan submission to establish sustainability benchmarks and guidelines.

Energy Conservation Measures
The project design will include strategies to reduce the energy consumption of the building and associated utility demand and greenhouse gas emissions. The design will incorporate both passive and active energy conservation measures that will allow the project to realize significant reductions in energy demand. The project will incorporate high performance envelope features including triple glazed windows with low U-value, solar control systems and optimized solar heat gain coefficients to reduce heating gains in the summer but take advantage of them during the winter. High efficiency energy recovery systems will be installed to capture and reuse as much heat as possible to significantly reduce the energy required for conditioning outside air. Energy efficiency mechanical distribution systems are being targeted such as radiant heating and other Dedicated Outdoor Air Systems. The project is aiming to electrify as much of the campus energy use as possible and utilizing heat pump systems to maximize efficiency and minimize demand on the grid. Finally, solar generation is being explored as a way to reduce the energy consumption, energy cost and the building's CO_2 footprint.

Noise Generation
The proposed mixed-use academic campus is compatible in uses with the surrounding East Deering neighborhood. The Roux Institute Campus is buffered by I-295, the abandoned Grand Trunk Railway, and adjacent marine uses. Development will adhere to City of Portland technical standards regarding noise, vibration, and other potential nuisances. Pre-development noise measurements will serve as the baseline of analysis, in order to assess noise impacts accurately and to allow improvements to baseline conditions where possible. Development will employ noise abatement techniques (screening, acoustical attenuation, landscape buffering, etc.) for the benefit of residents, students, and all users of the site.


Artist Interpretation

Hazardous Materials
Use of hazardous materials, if any, will be in academic and laboratory contexts, and managed in conformance with all local, state, and federal requirements.

Heat, Glare, and Radiation
Development studies will include analysis of heat, glare, and radiation impacts in order to understand and eliminate safety hazards and lessen impacts of new development. Development will comply with all City standards regarding heat, glare, and radiation.

Wind
Occupant comfort analysis will be performed during each phase of development when applicable site plans are reviewed, with design modifications as necessary to maintain acceptable conditions. The analysis will include comfort at and around buildings as well as major public spaces. Existing buffers of plantings at property lines will be maintained or replaced where appropriate.

Lighting
Exterior lighting will be full cut-off and dark-sky friendly. Fixture output will comply with all City lighting regulations to avoid light spill into neighboring areas from the site. Photometric analysis at each phase of development will be used to inform lighting design in accordance with Illuminating Engineering Society of North America (IESNA) Standards.

Height and Massing
The allowable building heights on the Roux Institute Campus are informed by the historic location and prominence of the Bean Building, the desire to create meaningful public open space while meeting all programmatic goals for the Roux Institute, resilient building design, and potential shadow and other impacts to neighboring properties. Building heights will stagger, with the greatest height at the center of campus and lower heights near the site's boundaries. Building heights around the Bean Building and within 35' of the western and northern edges of the campus will be no greater than 75'. Conceptual massing studies based on proposed building heights are attached as Appendix A.

Shadows
Height and massing will minimize shadow impacts to neighbors and avoid negative impacts to nearby existing public open spaces. The campus height map places the greatest heights to the middle of the site and progressively lower zones to the perimeter. Mechanical enclosures will be set back from roof edges to minimize impact. Conceptual shadow studies based on proposed building heights are attached as Appendix B.

Public Safety
Access to the campus is via Sherwood Street, through a 40-foot wide, 14'10' high highway underpass. The underpass height exceeds the NFPA requirement of 13.5 feet of clearance. The East Deering Fire Station is located one mile away from the campus. In addition, fireboat access will be available at the campus pier.

Public safety needs for the campus will be similar to those on other higher education campuses. Northeastern will have a 24-hour security presence on the Roux Institute Campus. Security personnel will be trained in basic emergency medical services, such as CPR. Other security measures planned for the campus will consider most current proven technologies, including remote-monitored security cameras and emergency blue light telephone boxes.

Bird Safe
The development will incorporate proven technologies and materials with acknowledgment that bird-friendly buildings reduce threats to birds without sacrificing attractiveness, functionality, or natural lighting.

Open Space
The campus will include a minimum of three acres of public open space designed to enhance waterfront access and provide bicycle/pedestrian network connectivity. The public open space shall be meaningful space, functioning as recreational, natural habitat, and/or public gathering space.

Neighborhood Engagement

The Roux Institute Campus is intended to become an extension of the East Deering neighborhood, which is separated from the site by Interstate 295, the rail corridor, and Maine Yacht Services. The site will be a walkable addition to the neighborhood, with open spaces, waterfront, campus-oriented retail, and restaurant amenities, but it also represents a change. To ensure the campus is designed in a manner benefiting the neighborhood will require robust communication with interested stakeholders.

The Land Use Code requires two Neighborhood Meetings related to the Institutional Overlay Zone and Institutional Development Plan processes. The Roux Institute team has used those requirements as a starting point for ongoing dialogue. The first Neighborhood Meeting was held virtually on November 18, 2021, with 26 registered attendants and 11 attendees. The feedback was positive, and attendees expressed interest in construction job opportunities, sought additional information regarding traffic and associated transportation improvements, indicated a desire for bike/pedestrian connectivity, requested that lighting plans be considerate of adjacent neighborhoods, and asked about climate resilience and disturbance during construction. A second Neighborhood Meeting was held in person at the Ocean Avenue Elementary School on April 6, 2022. Although the City only requires that abutters within 500 feet of the campus be notified of the meeting, IDEALS and Northeastern expanded the list of invitees to include a much broader radius and mailed over 1700 meeting notices, 48 people attendance. Many attendees expressed concerns about the scale of the proposed development, building height, and traffic. As a result, IDEALS and Northeastern reduced the planned square footage of construction by 27% and the tallest proposed building heights by 19%.

In addition to Neighborhood Meetings required by the regulatory process, IDEALS and Northeastern have hosted periodic virtual forums called Roux Institute Campus Roundtables as a way to engage with the East Deering neighborhood and beyond on an on-going basis. The first such event occurred December 14, 2021. Additional meetings occurred on February 1, March 23, and June 2, 2022 An Open House was held at the site on September 6, 2022, with over 130 public participants.

To keep all potential stakeholders apprised of the development plans, IDEALS and Northeastern maintain a website, www.rouxcampusportland.org, to showcase up-to-date plans, present information about the Roux Institute at Northeastern University, and provide notice of upcoming events with links to meeting documents and recordings of prior forums. The site is an interactive platform with an email link for questions and a feedback section that probes for input on a wide variety of issues. This platform will also be a valuable communication tool during construction, providing a means to share information related to construction schedule, work hours, management plans, public safety, and site access.

Additionally, Northeastern University and IDEALS have a designated community contact for members of the public. This contact works closely with neighborhood and city stakeholders to solicit ideas and feedback and ensure that any concerns are dealt with promptly, whether reported in person or through the website.

Finally, members of the team are conducting regular outreach to interested stakeholders and potential partners to gain broad input into development plans. This will continue to facilitate assessment and calibration regarding how the Roux Institute Campus can fit into the Portland landscape and ways it can best live up to its potential as a model for education, economic development, recreation, and aesthetics.

Regular Neighborhood Forums
Northeastern University and IDEALS will continue to host neighborhood forums on a quarterly basis to discuss items such as phasing plans, project impacts, construction plans and schedule, and any neighbor concerns.

Northeastern University and IDEALS will provide an estimated construction schedule at the beginning of a project and provide regular updates throughout construction.



Community Advisory Group
Northeastern University and IDEALS will create a Community Advisory Group to maintain a dialog for the purpose of sharing information on project development, planning, and seeking input. To the extent practicable, the group shall be comprised of a representative from the following categories:

- East Deering Neighborhood
- Recreation, parks, and trails
- Bicycle/pedestrian
- Rail
- Public Transit
- Portland Harbor
- Portland Public School System
- Higher Education
- Sustainability
- Business Community

The Community Advisory Group will meet quarterly and may meet more frequently as necessary. Input gathered and meeting documentation from Neighborhood Forums will be provided to the Community Advisory Group.

Construction Management Principles

A detailed Construction Management Plan will be submitted as part of the site plan review, based on the following principles:

- Open and transparent communication
- One-on-one conversations whenever possible
- Multiple channels to give and receive information
- Timely sharing of plans and considerations
- Receptivity and response to input
- Respect for affected parties

Northeastern University and IDEALS are committed to communicating early and often with neighbors and interested parties. Existing communication platforms – in-person meetings and calls; website; info@rouxcampusportland.org; and Neighborhood Forums will be supplemented with a dedicated construction webpage on the website, along with social media, texting, and a hotline to ensure the public has easy access to timely and accurate information.

Project Schedule
A Master Project Schedule will be prepared at the onset of each stage of construction, with distinct project schedules for buildings developed over the course of construction. Scheduling updates will be shared at the outset of each undertaking.

Public Safety Considerations
During construction of the initial phase, the site will be off-limits to the public. Thereafter, secured fencing and signage will be used to protect public spaces from construction areas and direct traffic flow. Pedestrian, bike, and vehicular access will be clearly marked throughout the campus. Appropriate lighting will ensure safe pedestrian routes. Where possible, buffers will be established between construction sites and vehicular and pedestrian ways. Following completion of initial phase, interim connections to bike and pedestrian ways will be provided when temporary construction impacts are necessary. All procedures will be OSHA compliant.





Construction Staging
Construction staging will occur inside the project's limit of work, as designated on the site plan submission or as approved by the Planning Board during the site plan review process.

Truck Routes
Truck routes and timing will be addressed in the projects' Construction Management Plan during site plan review and monitored throughout construction. In coordination with the city, wayfinding signage may be installed where specific locations are identified as no-travel zones for reasons of safety or traffic impacts. Every effort will be made to schedule construction traffic to avoid undue impacts when roadways are busy and/or queuing to gain access to the site. There will be no truck or construction-related parking within the city right-of-way.

Noise Impacts
Notwithstanding the existing buffers to the site, there will be noise impacts as a result of construction activities. For those noise events that are above the regular background level, advance notifications will be provided using the communications mechanisms described above. The City of Portland Noise Ordinance will be followed.

Air Quality Impacts
Construction Managers have a range of tools available to mitigate and manage dust and other agents effecting air quality. While the waterfront location and general westerly winds will partially alleviate these impacts, additional measures to be implemented as needed include covering loaded truck beds and soil stockpiles, use of wetting agents, and periodic cleaning of construction staging areas, roadways, and truck wheels.

Community Benefits

The Roux Institute at Northeastern University, through its programming and its publicly accessible waterfront campus, will provide numerous benefits to the residents of the City of Portland and beyond. At the core of the Roux Institute's mission is service to Portland and Maine's people by offering graduate programs in high-growth fields with generous scholarship support, launching startups and driving talent development, and supporting existing Maine businesses and institutions--all with the goal of bringing cutting edge technology capabilities to Maine through education, research, and entrepreneurship. The nearly billion-dollar investment in the Portland Campus will generate local jobs at all levels, both temporary and permanent. The very nature of an innovation hub like the Roux Institute is to create new opportunities.

Community Spaces
The Roux Institute's publicly accessible, waterfront campus will benefit the adjacent neighborhoods and greater Portland community. Some of those benefits include:

- At least three acres of open space will be built in the first phase of construction and maintained thereafter, available for use by all members of the public
- Safe public bicycle/pedestrian trails linking to the Back Cove and Eastern Promenade trails available for use by all members of the public
- Open space and a waterfront pedestrian walkway available for use by all members of the public
- Indoor spaces for use by members of the public, as available
- Convening space available for use by members of the public
- Snow ban parking for adjacent neighbors
- A pier available for public use with facilities for kayaking and paddleboarding

Workforce Development During Construction
Construction of the Roux Institute campus provides an opportunity to educate and develop our workforce for the future. The following are some examples of community benefit opportunities during the construction phase of the project:

Outreach to Local Schools - Portland Public Schools, Trade Schools and Community Colleges
- Host a Roux Institute Campus Construction Lab, where interested parties including future and current tradespeople will be invited to come learn from the project team about construction techniques, project management strategies, and trade work on this complex and technical project. This will gain exposure for a younger population to learn about the trades and construction industry and will contribute to the advancement of Maine's existing trade workforce
- Attend and participate in training programs within each of the established educational facilities interested in participating
- Involve field supervisory staff and craft workers in establishment of a curriculum for the core skillsets anticipated for the project
- Involve staff members as part time "adjunct professors" in the interested educational facilities and work to incorporate elements of the planning of the project in curricula via:
  - » ACE Mentoring and similar programs to engage with high school students
  - » Community College and Portland area Higher Education Institutions with the goal of incorporating project specific construction scheduling, estimating, and virtual design concepts into the curriculum

Apprentice Program Development
- Encourage and educate potential subcontractors on the incorporation of apprenticeship programs in their current business/recruiting and employee retention planning
- Incorporate the evaluation of trade contractors' apprenticeship programs in the selection of the subcontractors for the project
- Evaluate the current and past performance of the apprenticeship programs when evaluating potential subcontractors
- Establish goals for apprentice participation in construction workers on site and at off-site fabrication facilities



Local Worker Preference
- Hold local job fairs prior to the start of construction and throughout the construction phase of the project to ensure that the maximum number of local workforce participation is achieved
- Set goals and measure performance of each contractor for local resident worker participation including other measures of business level participation in the project, such as:
  - » Maine Based Business participation
  - » Women Owned Business
  - » Disadvantaged Business
  - » New Mainers

Community Benefits (continued)

Northeastern University's Roux Institute is delivering on its mission to erase the boundaries between the real world and academia. It achieves this goal by customizing learning programs and research initiatives to meet the needs of employers, by integrating classroom learning with professional experience, and by supporting the launch of innovative startup companies. The Roux Institute's collaborations with its employer-partners keep the institute in step with the economy's—and society's—changing needs and opportunities. They also enable the Roux Institute to identify and begin to address the state's urgent and most consequential challenges.

Together, the Roux Institute and its partners are:

- Co-designing educational programs that prepare workforce talent for today's innovation economy, focusing on STEM fields such as artificial intelligence and the computer, data, and advanced life sciences, and by integrating classroom learning with professional experiences afforded by employer-partners
- Conducting interdisciplinary research focused on solving challenges that affect Portland, the state of Maine, and communities globally. The explicit goal is to translate findings into knowledge and activities that make a significant, measurable impact on the world. Priorities include widening access to equitable and effective healthcare; providing broader and more reliable access to technology; and devising data- and technology-driven methods to mitigate dependence on unreliable supply chains
- Attracting, supporting, and launching new businesses throughout Maine, opening new doors to opportunity and prosperity for people across the state and region

Now in its third academic year, the Roux Institute is steadily laying the groundwork for transforming Maine's economy and is securely rooted in Maine and leading important, transformational impact throughout the state. From its launch through the start of the current academic term in September 2022:

- The institute's partnership ranks have grown tenfold as more than 110 Maine organizations now work with and benefit from the institute
- Five hundred graduate students are enrolled, and more than 900 employees of partner organizations have completed custom training programs
- Thirty-six startup companies have worked in residence at the Roux Institute, creating 52 new Maine jobs and raising $21M in investment capital to grow their new businesses
- Five, robust research programs are established, led by globally recognized leaders who are pursuing substantial governmental and private funding to spur growth
- And more than 125 Mainers are employed by the institute, 25% of whom relocated to Maine to join the effort and support the institute's mission

Commitment to Diversity, Equity, and Inclusion
The COVID-19 pandemic, a heightened awareness of the devastating impact of racial and ethnic discrimination, and other global disruptions have starkly illustrated the need for a new higher education model that empowers people to navigate and solve complex problems across a multiplicity of contexts, whether geographic, political, intellectual, socioeconomic, or cultural.

To this end, Northeastern University recently unveiled *Academic Plan: Experience Unleashed*, a strategic vision that aligns learning, research, and entrepreneurship to solve urgent challenges in collaboration with partners around the world. Central to the plan is a commitment to human diversity. Throughout the university's global system, Northeastern teams are working with local partners and communities to build a diverse, equitable, and inclusive community of learners, faculty, entrepreneurs, staff, and partners. This work is based on the truth that humankind's toughest challenges are dynamic, interconnected, and affect people and communities in ways that depend upon context. To maximize our impact within diverse and rapidly evolving contexts, we must immerse learning, discovery, and innovation in real-world experience.



Enabling Access for all Mainers
Through the transformational Roux Institute's *Alfond Scholars Initiative*, the university will distribute $67 million in scholarships to Maine residents who are studying at the institute, providing unprecedented support for Mainers to pursue academic and career advancement. More than $11M in need-based scholarships have been awarded inception-to-date. The Roux Institute's *Alfond Scholars Initiative* also supports the recruitment and retention of diverse learners through its co-op and post-doctoral research programs.

Benefits to Employers and the Business Community
The Roux Institute was founded on collaboration with employer partners and higher education partners, which keep the Institute in step with the economy's—and society's—changing needs and opportunities. Twenty-three of the institute's industry partners are headquartered in Portland. Collectively, these organizations employ more than 40,000 people. Eleven Portland-based community and academic partners, who collectively employ 12,000 people, also work with the Roux Institute. These partnerships enable The Roux Institute to support Portland-based companies and the people they employ, while also identifying and beginning to address the city's most urgent and consequential challenges.

Benefits to Higher Education and Community Partners
Northeastern University, through its work at The Roux Institute, is committed to working with higher education and community partners throughout Maine to decrease the barriers of entry to high tech careers, and to bring our talent and expertise to benefit these vital organizations.

Community Benefits (continued)

The institute's work with Maine higher education partners focuses on building an ecosystem that creates clear pathways for learners to and through college and onto graduate learning, as well as building the critical R&D capacity across the city and the region. Through its fourteen higher education partnerships, the Roux Institute and its partners feature joint expertise to ensure that Maine-based learners get a robust education and can contribute effectively to workforce and research needs. For example, the institute has developed accelerated matriculation and completion pathways with five higher education partners, helping college graduates to maximize returns on both time and tuition investments, while remaining in Maine to complete master's degrees at The Roux Institute on an accelerated timeline.

The institute's various community partnerships focus on leveraging people, space, and networks to advance the work of Maine's mission-drive, community organizations. For example, Roux Institute faculty volunteer to lead computer science training for teachers in Portland schools; Casco Bay High School students complete internships at The Roux Institute; and the institute hosts Girls Who Code camps for middle and high school students from throughout Maine.

Similar, near-term events are planned as well – some of which are directly linked to the university's diversity, equity, and inclusion commitments. For example, The Third Place and The Roux Institute are partnering to host networking events to support BIPOC professionals as they connect, live, and work in Portland. The institute is committed to expanding and scaling these offerings. In the future, the institute's community engagement programs will support educators, students, and community groups that share our commitment to a diverse, equitable, and inclusive high-tech ecosystem that is a possibility for all – and benefits all.

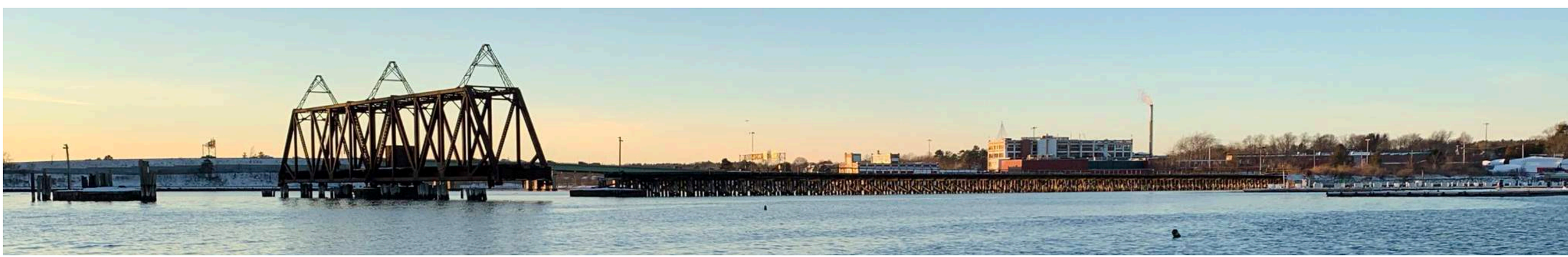


Supporting the Growth of Local Entrepreneurs

A final community benefit is the robust entrepreneurship programming supporting people to learn about business creation and supporting entrepreneurs to launch their ventures. Already, the Institute has hosted two "Maine Start Summits," which are three-day business creation hackathons and many other events for entrepreneurs, which create open and accessible on-ramps for anyone to bring an idea to life and begin to not only provide Portland with great products, but also generate more jobs and revenue at the same time.

Commitment to the City of Portland and our Region

Ultimately, the university's success will be inextricably linked to that of its faculty, graduates, and partners. Through the work of the Roux Institute and other organizations, Maine will be home to a thriving, tech-forward economy fueled by people and businesses leading innovations in realms from AI-driven healthcare to life sciences technology. This economy will attract new people and companies to the region. It will also provide unprecedented opportunities for all Mainers in a manner that honors and enriches their treasured lifestyle and culture.



Appendix A
Conceptual Massing Studies

Campus Concept | near-term



Campus Concept | near-term



Campus Concept | long-term



Campus Concept | long-term



Appendix B
Conceptual Shadow Studies

Shadow Study | December/June: 9am, 10:30am Noon, 1:30pm & 3pm, near-term & long-term



Appendix C
Supplemental Transportation Information

VHB's Technical Transportation Appendix

Trip Generation

The person trip generation estimates for the currently contemplated full development were determined including both internal trips between uses on the site and external trips that have either origins or destinations off site that use all modes to travel to and from the site. The total trips generating and their associated ITE Land Use Codes are provided in Table 1. Information on Roux projected population and programming and the resulting trip profile are provided in Table 2 below. For more specific information for the trip generation of the Academic Building, the detailed trips by academic population are illustrated in Tables 2, 3 and 4 for the near-, mid-, and long-term.

Table 1: Person Trips for IDP Full Build Development Program (including internal and external)

Site Land Uses and Descriptions				*AM Peak Hour*			*PM Peak Hour*		
LUC	**Land Use**	**Size**	**Unit**	**Total**	**Entering**	**Exiting**	**Total**	**Entering**	**Exiting**
N/A	Academic Building	400	1,000	314	288	26	562	138	425
221	Multifamily Housing (Mid-Rise)	650	Units	274	63	211	254	155	99
710	General Office Building	200	1,000 SF	304	268	36	288	49	239
760	Research and Development Center	50	1,000 SF	52	42	9	49	8	41
310	Hotel	125	Rooms	58	32	25	74	38	36
822	Strip Retail Plaza (<40k)	10	1,000 SF	24	14	9	66	33	33
932	High-Turnover Sit-Down Rest.	15	1,000 SF	144	79	65	136	83	53
	Total Trips			**1169**	**786**	**382**	**1428**	**503**	**926**

Table 2: Academic Building Trip Generation Components on a Typical Day (Near-Term)

		AM Peak Hour	*PM Peak Hour*
755 Enrolled Graduate Learners (hybrid)	in	14	22
	out	0	29
	total	14	51
1,000+ Corporate Learners (online and hybrid)	in	20	0
	out	0	40
	total	20	40
150 People at Special Events	in	15	50
	out	0	15
	total	15	65
30+ Embedded Startups (ITE LUC Office 70 emp)	in	30	10
	out	4	47
	total	34	57
65 Faculty & Staff (ITE LUC Office 65 emp)	in	28	9
	out	4	44
	total	32	53
10% more Visiting Faculty & Staff (ITE LUC Office 7 emp)	in	3	1
	out	0	4
	total	3	5
65 Researchers (ITE LUC R&D 65 emp)	in	33	4
	out	6	32
	total	39	36
Total Academic Building Population	**in**	**143**	**95**
	out	**14**	**211**
	total	**157**	**307**

Table 3: Academic Building Trip Generation Components on a Typical Day (Mid-Term)

		AM Peak Hour	*PM Peak Hour*
1,680 Enrolled Graduate Learners (hybrid)	in	32	48
	out	0	64
	total	32	112
2,500+ Corporate Learners (online and hybrid)	in	50	0
	out	0	100
	total	50	100
150 People at Special Events	in	15	50
	out	0	15
	total	15	65
50+ Embedded Startups (ITE LUC Office 100 emp)	in	43	13
	out	6	61
	total	49	74
120 Faculty & Staff (ITE LUC Office 120 emp)	in	52	14
	out	7	70
	total	59	84
10% more Visiting Faculty & Staff (ITE LUC Office 12 emp)	in	5	1
	out	1	7
	total	6	8
85 Researchers (ITE LUC R&D 85 emp)	in	42	6
	out	7	40
	total	49	46
Total Academic Building Population	**in**	**239**	**132**
	out	**21**	**357**
	total	**260**	**489**

Table 4: Academic Building Trip Generation Components on a Typical Day (Full Build out)

		AM Peak Hour	*PM Peak Hour*
1,680 Enrolled Graduate Learners (hybrid)	in	32	48
	out	0	64
	total	32	112
3,500+ Corporate Learners (online and hybrid)	in	70	0
	out	0	140
	total	70	140
150 People at Special Events	in	15	50
	out	0	15
	total	15	65
50+ Embedded Startups (ITE LUC Office 100 emp)	in	43	13
	out	6	61
	total	49	74
165 Faculty & Staff (ITE LUC Office 165 emp)	in	71	18
	out	10	88
	total	81	106
10% more Visiting Faculty & Staff (ITE LUC Office 16 emp)	in	7	2
	out	1	9
	total	8	11
105 Researchers (ITE LUC R&D 105 emp)	in	50	7
	out	9	48
	total	59	55
Total Academic Building Population	**in**	**288**	**138**
	out	**26**	**425**
	total	**314**	**562**

Target mode shares for each proposed Roux Campus land use were developed and discussed with City of Portland and Maine Department of Transportation officials at several meetings. These shares, as outlined in Table 5 below, were applied to external trips to determine the likely number of trips by each mode.

Table 5: Mode Share By Land Use

Land Use	*% Transit*	*% Ped/Bike*	*% Vehicle*	*% Carpool*
University	10%	20%	65%	5%
Residential	10%	20%	65%	5%
Office	10%	10%	75%	5%
Hotel	10%	10%	75%	5%
Retail	10%	50%	40%	0%
Restaurant	10%	50%	40%	0%
Overall Site Mode Shares	**10%**	**18/19%**	**67/66%**	**5%**

Applying each of these mode shares to the trip generation for the appropriate land use results in the trip generation by mode as shown in Table 6 below.

Table 6: External Trips by Land Use and Mode for Long-Term Build Out

Peak Hour	Vehicle			Transit			Walk/Bike/Other			Total Trips		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
AM	424	141	565	62	22	84	107	46	153	593	208	801
PM	217	520	737	34	77	111	77	133	211	329	730	1058

Parking Demand

Parking demand will be determined by phase as the existing parking demand and anticipate mode shares are determined. In each phase, the existing and future parking will be evaluated. Base parking demand was estimated for each hour of the day using ITE Parking Generation Manual, 5th Edition rates and the same land use codes as for trip generation with the exception of the Roux Institute which used the evaluation of population travel profiles as outlined above. The estimates indicate that total parking demand across all uses on the site will peak at 4 PM as driven by Roux Institute parking needs.

Table 7: Estimated Peak Parking Demand based on Current Long-Term Buildout Development Program[1]

LUC	Land Use Group	Size	Unit	Peak Parking Demand (4:00 PM)
710	General Office Building	200	1000 Sq. Ft.	329
820	Convenience Retail	10	1000 Sq. Ft.	6
932	High-Turnover (Sit Down) Restaurant	15	1000 Sq. Ft.	24
222	Multifamily Housing (High Rise)	650	Units	153
310	Hotel	125	# Rooms	55
550	Roux Institute	400	1000 Sq. Ft.	1002
760	Research and Development	50	1000 Sq. Ft.	62
			Total:	**1631**

[1] Parking demand as calculated based on goal mode shares provided above

As indicated, the parking numbers are estimates based on target mode shares and the currently contemplated building program. As the site is developed, Site Plan Review and Traffic Movements Permits will be required that will involve monitoring and reporting on traffic and parking. Based on monitoring results and TDM measures included in these submittals, the parking demand and ultimately supply will be determined so that the site is properly parked for the context at that time. As stated in the Land Use Code, the Planning Board will establish the off-street parking requirement based on a parking study. The Roux Institute is actively pursuing strategies with the City of Portland to prevent on-street parking by campus visitors.

Transportation Improvements

Based on the evaluation of the IDP full build program and the anticipated impact on the transportation network, a series of potential projects have been identified that could mitigate these impacts, if they are found to occur in the future. Each project is listed with the anticipated phase of the program development at which the mitigation may be necessary based on operations. On page 29 and 30 in the main IDP document, please find maps showing the locations of the potential transportation improvements.

- Sherwood Street (short-term)
  - Improve Sherwood Street to accommodate bicycles and pedestrians in separate facilities (i.e., bike lanes and sidewalk) where possible with potential shared accommodations through the limited cross section under the I-295 bridge. A separate left and right turn lane on Sherwood is not anticipated to be required until the mid-term and a traffic signal that is required in the long-term.
- Shared Use Path Connection (mid-term)
  - A shared use path connection from the site to provide better connectivity to the Back Cove Trail, neighborhood, and/or Eastern Promenade Trail

- Washington Avenue at Veranda Street (mid- to long-term)
    - Addition of an eastbound right turn lane (Bates approach) and northbound right-turn lane (I-295 Ramp). With these lanes, and timing changes, the overall LOS will improve to a C during the AM peak hour and LOS D during the PM peak hour (was LOS F without improvement). Alternatively, the ramp from the Washington Avenue off-ramp to Sherwood Street could be considered.
- Veranda Street (mid-term)
    - Improve Veranda Street to accommodate bicycles in separate space.
- Veranda Street at Sherwood Street (full IDP build program as currently contemplated)
    - Provide signalized control including a separate northbound left-turn lane. These changes would result in an overall LOS C/D during the AM/PM peak hours.
- Bates Street at Baxter Boulevard (full IDP build program)
    - Provide an all-way stop controlled intersection. Under all-way stop control, the intersection would experience a slight increase in delay resulting in less than 19 seconds of delay for the westbound and eastbound approaches. However, it would improve the southbound left turn from LOS B during the AM and PM peak hours to a LOS A.
- Washington Avenue at Presumpscot Street (full IDP build program as currently contemplated)
    - Per discussion with the City's Consultant, VHB also looked at the intersection of Washington Avenue at Presumpscot Street based on its likely effect on the operations of Washington Avenue at Veranda Street. For the full IDP build program, a northbound left turn prohibition would need to be considered, a second southbound thru lane added and the southbound left advance phase removed to address the poor operations during the AM peak hour. In addition, the pedestrian crossing the south leg of the intersection would need to be removed in order to improve overall operations.

Zachary Powell <zpowell@portlandmaine.gov>

Roux - Status Traffic Review Comments

Tom Errico <thomas.errico@tylin.com> Wed, Apr 17, 2024 at 4:04 PM
To: "zpowell@portlandmaine.gov" <zpowell@portlandmaine.gov>
Cc: Bruce Hyman <bhyman@portlandmaine.gov>, Kevin Kraft <kkraft@portlandmaine.gov>, Keith Gray <kgray@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>

Hi Zack – The following is a list of comments and status given the most current information provided by the applicant. Many of these comments are associated with the review of the MaineDOT Traffic Movement Permit Section 7 Study.

- The actual field intersection count data should be provided.

Status: The applicant has provided the noted information and I find it to be acceptable.

- The applicant should note the specific hour of the trip generation estimate noted in Table 5.

Status: The AM was from 8-9am and PM from 5-6pm. This should be noted in the final Section 7 report.

- The trip generation for 300 staff seems low if assumed to be part of Faculty, Staff, and Researchers.

Status: Most staff is part of the General Office Category. The faculty was assumed to be 75. This should be clarified in the final Section 7 report.

- The percentage of internal capture trips is high, particularly during the PM peak hour, where there is a reduction of 202 trips.

Status: It was agreed that a sensitivity analysis be performed with an additional 100 trips added to and from the site driveway and distributed throughout the network.

- The capacity analysis table should include information on existing lane storage lengths in the assessment of queues exceeding storage.

Status: Outstanding.

- Back up information on the SimTraffic model field calibration shall be provided.

Status: The requested information has been provided and I continue to review existing base conditions.

- Some intersections see improved levels of service or delay when comparting existing volumes to future volumes or No-Build to Build volumes.

Status: A detailed response should be provided.

- The SimTraffic model delay estimates seem better than actual field conditions.

Status: As noted above, I continue to review field calibration information.

- The applicant recommends improving traffic signal coordination and timing optimization. The applicant should note how whether the SimTraffic model already accounts for optimization.

Status: Outstanding.

- The applicant is recommending the prohibition of left-turns from Vernada Street onto I-295 at Washington Avenue, with the exception of Metro buses. The applicant shall provide specific details on similar prohibitions employed in other communities with documentation from those communities on operations.

Status: Outstanding.

- The SimTraffic model included left-turn volumes for the scenario where left-turns from Vernada Street are prohibited.

Status: The model has been revised.

- The SimTraffic Model should include current “No Turn on Red” restrictions.

Status: The model has been revised for Build and Mitigation options. The full Section 7 Study should be updated.

- We are concerned about the offset configuration of the Veranda Street/Sherwood Street intersection. We would suggest that the applicant conduct an evaluation that includes full build out of the site to understand long-term improvements needs.

Status: The city continues to review model results, signal warrant analysis, traffic calming considerations, and active transportation considerations.

- The SimTraffic model should reflect unequal lane utilization on the I-295 approach to Veranda Street at Washington Avenue.

Status: The model has been revised.

- The SimTraffic model should reflect some pedestrian calls, Currently, no calls are included in the model.

Status: The model has been revised for Build and Mitigation options. The full Section 7 Study should be updated.

- The applicant should assess project traffic impacts on conditions at Presumpscot School on Sherwood Street and Presumpscot Street.

Status: Outstanding.

- The applicant shall perform an analysis of providing a Lead Pedestrian Interval (LPI) at the Washington Avenue/Veranda Street intersection.

Status: This has been performed, but the model alternatives are being modified.

- The applicant shall investigate the feasibility of providing a crosswalk on the I295 approach to Veranda Street at Washington Avenue.

Status: General information has been provided, but the city requests that an improvement plan be provided that details how this change can be implemented.

- The applicant shall investigate reconfiguring Washington Avenue between Veranda Street and Presumpscot Street with two outbound lanes and a single inbound lane. Additionally, investigate access management improvements for this segment.

Status: Initial traffic modeling has been performed, but revised analysis is expected.

- The applicant shall investigate providing two approach lanes on Presumpscot Street and modifying intersection geometry to reduce the crossing distance across Presumpscot Street.

Status: Plans should be prepared that depict this change. Also, specific changes to levels or service with and without the additional lane should be provided.

- The applicant shall investigate the feasibility of providing an All-Way STOP condition at the Baxter Boulevard/Bates Street intersection.

Status: It is our understanding, MaineDOT is investigating this change, so this is outstanding.

- The applicant conducted several improvement alternatives along Washington Avenue from Veranda Street to Presumpscot. The applicant has been requested to expand the alternatives so that improvements (LPI, Veranda turn prohibition, Washington Avenue single inbound lane) are combined. It was also request that the Washington Avenue single lane inbound alternative, assume bike lanes would be provided and not a center two-way left turn lane.

Status: Outstanding.

- The applicant shall revise the Build with the Left-Turn Prohibited at Veranda Street volumes to account for incorrect volume shift at Exit 9.

Status: Outstanding.

- The level of service results at the Veranda Street intersection and Sherwood Street with left turns prohibited is counterintuitive. The model shows the southbound Sherwood Street approach improving, with increased left turn volume.

Status: Outstanding.

- I continue to review the traffic signal warrant analysis at the Veranda Street/Sherwood Street intersection. The applicant is updating the analysis to reflect volume inconsistencies in the calculations**.**

Status: Outstanding.

- **The city identified an alternative to convert the northerly Sherwood Street approach to one-way from Vernada Street (a short section). This was identified to simply traffic movements. The East Deering Neighborhood does not support this alternative.**
- **The city suggests the implementation of a comprehensive traffic calming plan on Veranda Street that would include a vertical device at Sherwood Street, Kensington Street, and Arcadia Street.**

Please contact me if you have any questions.

Best regards,

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Transportation Demand Management Plan

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MARCH 2024

Table of Contents

1 Introduction 1

1.1 Program Summary and Project Status 1
1.1.1 Existing Conditions 2
1.1.2 Proposed Development Program 2

2 Mobility Context 4

2.1 Vehicular Access and Circulation 5
2.2 Walking and the Pedestrian Environment 5
2.2.1 Existing Conditions 5
2.2.2 Future Commitment 6
2.2.3 Potential Future MaineDOT Infrastructure 6
2.3 Bicycling Environment and Facilities 6
2.3.1 Existing Conditions 6
2.3.2 Future Commitment 7
2.3.3 Potential Future MaineDOT Infrastructure 7
2.3.4 Other Potential Future Infrastructure 8
2.4 Public Transit 10
2.4.1 Existing Conditions 10
2.4.2 Future Opportunities 11
2.5 Ride-Hailing 12
2.6 Current Parking Policies 12
2.7 Existing TDM Efforts 12
2.8 Future TDM Framework 13

3 TDM Coordinator 14

4 Baseline TDM Data 16

4.1 Modal Split 16
4.1.1 Roux Institute at Northeastern University Transportation Survey 16
4.1.2 Traffic Movement Permit Mode Split Data 17
4.2 Trip Generation 17
4.3 Proposed Parking Supply/Demand 18

5 TDM Mode Split Targets 19

6 Mode Split Target Strategies 20

7 Monitoring and Reporting Plan 23

List of Tables

Table No.	Description	Page
Table 1	Development Program	2
Table 2	Transportation Survey Mode Split Data	17
Table 3	TMP Mode Split	17
Table 4	Trip Generation	18
Table 5	Automobile Mode Split Targets	19
Table 6	TDM Strategies – Commitments	21

List of Figures

Figure No.	Description	Page
Figure 1	Proposed Site Plan	3
Figure 2	Campus Transportation Access	5
Figure 3	15 Minute Bike Shed Zone	7
Figure 4	Existing and Potential Future Bicycle Facilities	9
Figure 5	Public Transit Access	11

1

Introduction

Pursuant to Section 17.3 of the City of Portland Technical Manual, the Roux Institute at Northeastern University's Transportation Demand Management Plan (TDM) provides a cohesive approach to establish a targeted set of strategies aimed at reducing single occupancy vehicle trips to and from the proposed campus in Portland, Maine. The TDM plan describes how the Roux Institute at Northeastern University will provide information and education, enhance alternative transportation infrastructure and mobility, and incentivize students, faculty, and staff so that they use more sustainable, multimodal commuting options such as walking, bicycling, transit, carpooling and telecommuting. The Roux Institute at Northeastern University is committed to ongoing annual surveying to monitor the implementation and success of the TDM plan.

1.1 Program Summary and Project Status

In 2020, the Roux Institute at Northeastern University was launched to build expertise at the intersection of humans and technology. The campus is currently temporarily operating at 100 Fore Street but will be relocating to the redeveloped B&M Baked Beans facility. In its permanent waterfront location in East Deering, the Roux Institute at Northeastern University will continue to provide educational, research, and collaborative programs in areas including artificial intelligence, computer and data sciences, digital engineering, advanced life sciences, and medicine. The Roux Institute at Northeastern University offers post-graduate degrees and certifications, conducts research, assists start-ups, and partners with private, public and non-profit organizations. The mission of the Roux Institute at Northeastern University is *a vision to enable the creation of a synergistic technology and life science-driven economy and workforce, the Roux Institute at Northeastern University designs, curates, and integrates learning, research, and entrepreneurial solutions in collaboration with industry, academic institutions, and community organizations to catalyze talent development and economic impact throughout Maine.*

In February 2023, the Portland City Council approved the Institutional Overlay Zone for the campus at the old B&M Baked Beans site. The project team is currently embarking on the site plan review and public input process with the City of Portland, which includes the preparation and submission of a MaineDOT Traffic Movement Permit application. Permits are expected by the summer of 2024, when construction will begin, with an opening date in 2027. The campus will continue to grow over time in subsequent years and phases.

1.1.1 Existing Conditions

The Roux Institute at Northeastern University currently leases 84,000 sf of institutional space at 100 Fore Street adjacent to the East End neighborhood and near the waterfront in downtown Portland. In the fall of 2023, there were 665 enrolled students and 175 staff, researchers and faculty. There are currently 16 graduate programs in computer and data science, analytics, cloud software, cybersecurity, life sciences, and project management. To realize its full potential, the Roux Institute at Northeastern University is seeking to relocate its campus and expand in size as described in the following section.

1.1.2 Proposed Development Program

The campus will be anchored by a 238,000 square foot Learning, Research and Collaboration building and the 58,000 square foot Bean Building housing a start-up incubator program. By 2032, the campus plans to accommodate 3,123 graduate students in addition to supporting uses as shown in Table 1. An 8,000 square foot café and a day care center providing care for 50 children will be located on-site primarily for the families of students, staff, and faculty. In addition to its academic offerings, the campus will benefit the community by contributing to local economic growth and providing open space along the waterfront, active transportation accommodations throughout the site, job creation, and innovation space. The site plan is shown in Figure 1.

Table 1 Development Program

Program Component		2027 (Opening)	2032
Day care center		50 Children	50 Children
Academic Café		8,000 sf	8,000 sf
Roux Institute at Northeastern University	Graduate students	1,899 students	3,123 students
	Faculty, Staff, and Researchers[1]	225 staff	300 staff
	Embedded startup[1]	60 staff	100 staff
	JAX and Other Signature Partners[1]	55 staff	64 staff
	Affiliated Users[2]	35 visitors	100 visitors
	Special Events (daily)	150 attendees	150 attendees

1 All staff counts are in full-time equivalents.
2 Affiliated Users is a broad category for occasional visitors such as corporate learners, investors, donors, mentors, and neighbors.

The garage has been designed to accommodate 625 vehicular parking spaces, and parking for 66 bicycles. In addition to the garage spaces, there will be 14 parking spaces provided at grade on the site. All on-site parking will be paid parking, and a parking office will be created to manage permitting and enforcement for the campus. Parking costs and regulations may vary between categories of users (students, staff, faculty, visitors, etc.). Parking will be shared between uses

within the campus only. This development will not rely on any off site on-street parking. The campus may include on-site car sharing, enabling travel to and from the site using other modes, with the comfort that vehicles are available if necessary. The TDM measures presented in this plan will be critical to maintaining the expected parking demand.

Will the full capacity of the parking garage be available during Phase I? Will parking costs be market rate? If so, for whom? - this is key to understanding incentives/ disincentives to driving.

Figure 1 Proposed Site Plan



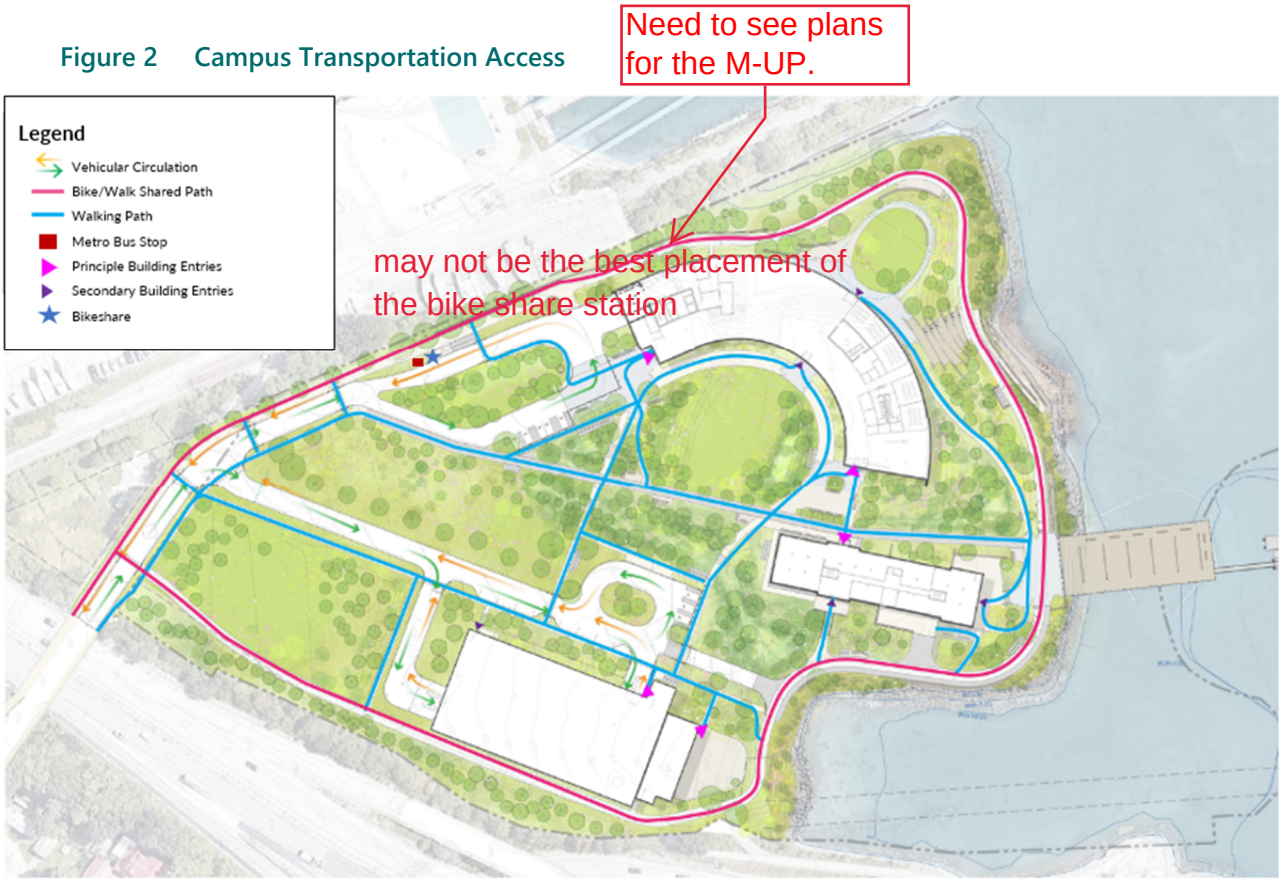
2

Mobility Context

For a TDM plan to be successful in shifting drive alone vehicle trips to transit, carpool, walk, and bicycle trips, it is essential to understand the multimodal transportation system surrounding the site. This section describes the existing transportation network challenges and future opportunities the Roux Institute at Northeastern University faces in redeveloping the site for their permanent campus.

The proposed waterfront site is located in East Deering adjacent to a marina and residential neighborhood comprising of single and multifamily homes as well as a commercial area which includes restaurants, bars, auto mechanics, and offices. I-295 runs along the western edge of the site, however the site will be well connected to the East Deering neighborhood, Back Cove, and the Portland Peninsula on the eastern promenade via vehicle, pedestrian, bicycle, transit and potential water taxi facilities. As shown in Figure 2, there are several promising opportunities to enhance and expand these transportation systems as part of the project to improve transportation mobility in and around the campus.

Figure 2 Campus Transportation Access



2.1 Vehicular Access and Circulation

A single vehicular access point to the site is provided via Sherwood Street at the intersection with Veranda Street through a 40-foot-wide highway underpass. Sherwood Street will continue to serve as vehicular access into and out of the campus in the future. The site is in close proximity to I-295, Route 1, Washington Avenue, and Baxter Boulevard. The traffic signal system along Washington Avenue is a traffic responsive system operating with high efficiency. Intersections of Washington Avenue at Veranda Street, at Presumpscot Street, and at Ocean Avenue are each signalized intersections.

2.2 Walking and the Pedestrian Environment

2.2.1 Existing Conditions

The surrounding East Deering neighborhood provides pedestrian amenities including sidewalks along Washington Avenue and Veranda Street. A sidewalk runs along the west side of Bates Street but narrows and is periodically blocked by utility poles. There is no sidewalk present on the east side of Bates Street. The Back Cove trail (multi-use path) runs along the Back Cove and Tukey's Bridge near the site. The main roadway access to the site is via Sherwood Street which consists of a 30-foot-wide roadway in a 50-foot wide right of way and includes non-continuous sidewalk segments mostly on the north side. The pedestrian connectivity to the Portland

Peninsula is accessible from the Back Cove Trail across the west side of Tukey's Bridge. The sidewalk connecting from the intersection of Washington Avenue/Veranda Street is narrow and adjacent to vehicular traffic on the ramp to I-295. The sidewalk merges with the Back Cove Trail which adds bicycle and pedestrian demand to a narrow, shared use path over Tukey's Bridge. There is no existing direct connection to this shared use path from the campus.

Commitments vs requirements TBD

2.2.2 Future Commitment

The Roux Institute at Northeastern University will improve pedestrian safety and connectivity to the East Deering neighborhood from the campus by providing continuous sidewalks on both sides of Sherwood Street. A crosswalk will be implemented across Sherwood Street at Veranda Street. Once on the site, pedestrian facilities will connect site uses and points along the waterfront. Improvements to pedestrian connections will increase walkability for the site.

2.2.3 Potential Future MaineDOT Infrastructure

The infrastructure described above will be constructed to allow for future connections to potential MaineDOT infrastructure. MaineDOT is contemplating a 14 foot wide shared use path on a new bridge parallel to Tukey's Bridge on the east side that would provide a direct connection from the campus to the Portland Peninsula. In addition, a shared use path under Tukey's Bridge would improve pedestrian access to and from the campus to the Back Cove trail and for pedestrians traveling between East Deering and the Portland Peninsula using the future shared use path bridge. These new shared use paths would provide wider, safer, and more comfortable accommodations for pedestrians and improve connectivity.

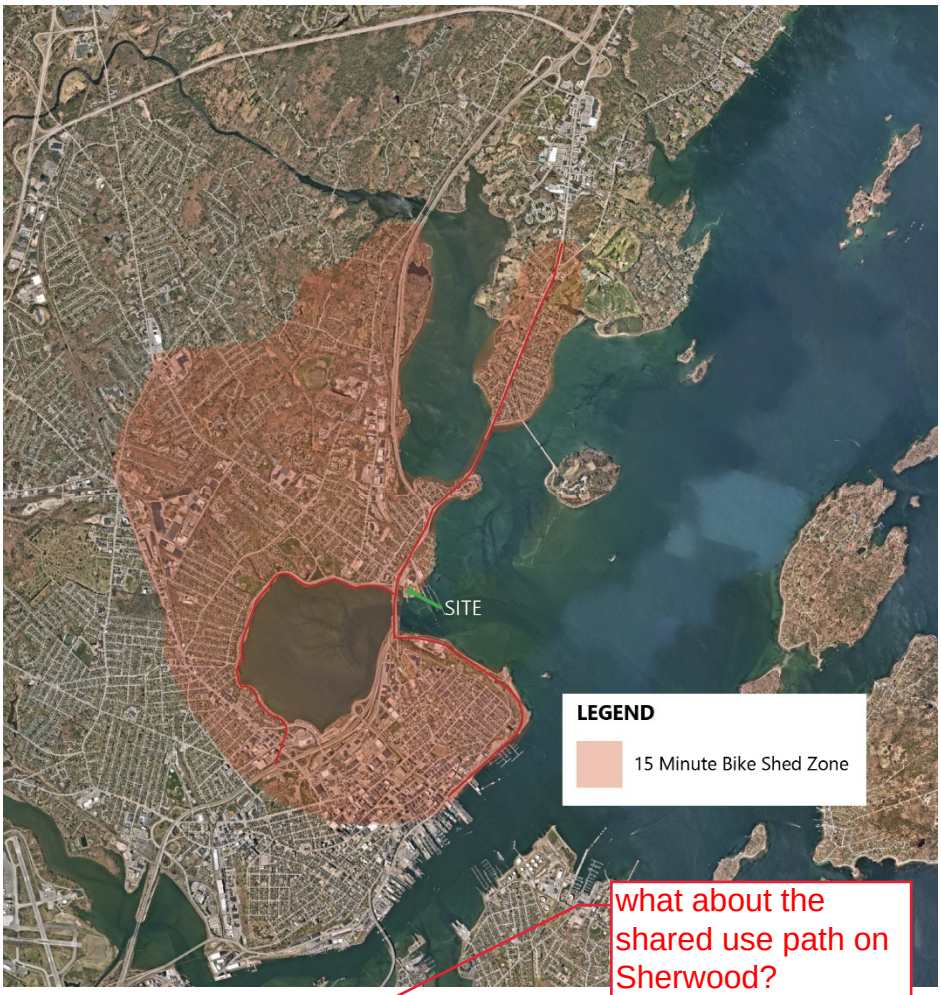
2.3 Bicycling Environment and Facilities

2.3.1 Existing Conditions

Bicycle facilities are present in the East Deering neighborhood on Washington Avenue including buffered bike lanes north of Presumpscot Street and faded sharrows along Veranda Street. Bates Street provides a bike lane from Washington Avenue to Baxter Boulevard. The Back Cove trail (multi use path) runs along the Back Cove and Tukey's Bridge near the site. There are currently no bicycle facilities on Sherwood Street. Similar to the discussion above describing the pedestrian access across the shared use path on Tukey's Bridge, bicyclists must also use the narrow path or bike to Baxter Boulevard and the Back Cove Trail to connect to the Portland Peninsula. Although this shared use path provides access to the Back Cove trail, it does not provide direct access to the campus. There are 8 public U-racks totaling 16 bicycle parking spaces located within the 970 Baxter Boulevard parking lot.

Walkscore.com rates East Deering with a Bikescore of 58/"Bikeable" indicating some bike infrastructure is present. The 15-minute bike shed zone from the campus is illustrated in Figure 3.

Figure 3 15 Minute Bike Shed Zone



2.3.2 Future Commitment

The Roux Institute at Northeastern University is dedicated to creating a safer, complete street along Sherwood Street to accommodate bicyclists into and out of the site by providing bicycle lanes. The campus will provide 166 bicycle parking spaces for students, staff, faculty and visitors. This quantity is more than triple the required amount of bicycle parking per the Portland Technical Manual. Shower and locker facilities will be provided for those commuters who bicycle to campus. The Roux Institute at Northeastern University will explore providing a Bike Fix-it Station for bike commuters and other visitors to the site.

TDM strategies says WILL provide fix it station.

2.3.3 Potential Future MaineDOT Infrastructure

The infrastructure described above will be constructed to allow for future constructed connections to potential MaineDOT infrastructure. MaineDOT is contemplating a 14 foot wide shared use path on a new bridge parallel to Tukey's Bridge on the east side that would provide a direct connection from the campus to the Portland Peninsula. In addition, a 10 foot wide shared use path under Tukey's Bridge would improve bicycle access from the campus to the Back Cove trail and bicycle connectivity between East Deering and greater Portland.

2.3.4 Other Potential Future Infrastructure

The City of Portland is currently working on the *Baxter Boulevard | Bates Street | Veranda Street Bikeway Project*[1] to implement buffered bicycle lanes on Veranda Street and a two-way bi-directional separated bike lane on Bates Street. Other potential opportunities for multi-use paths in the area include the Berlin Subdivision railroad right-of-way to points north ending at the Yarmouth Park and Ride on Exit 15 of I-295. Additionally, the Martin's Point Shared Use Path study considered a shared use path from Sherwood Street to the recently installed shared use path west of the Martin's Point Bridge starting at Wordsworth Street.

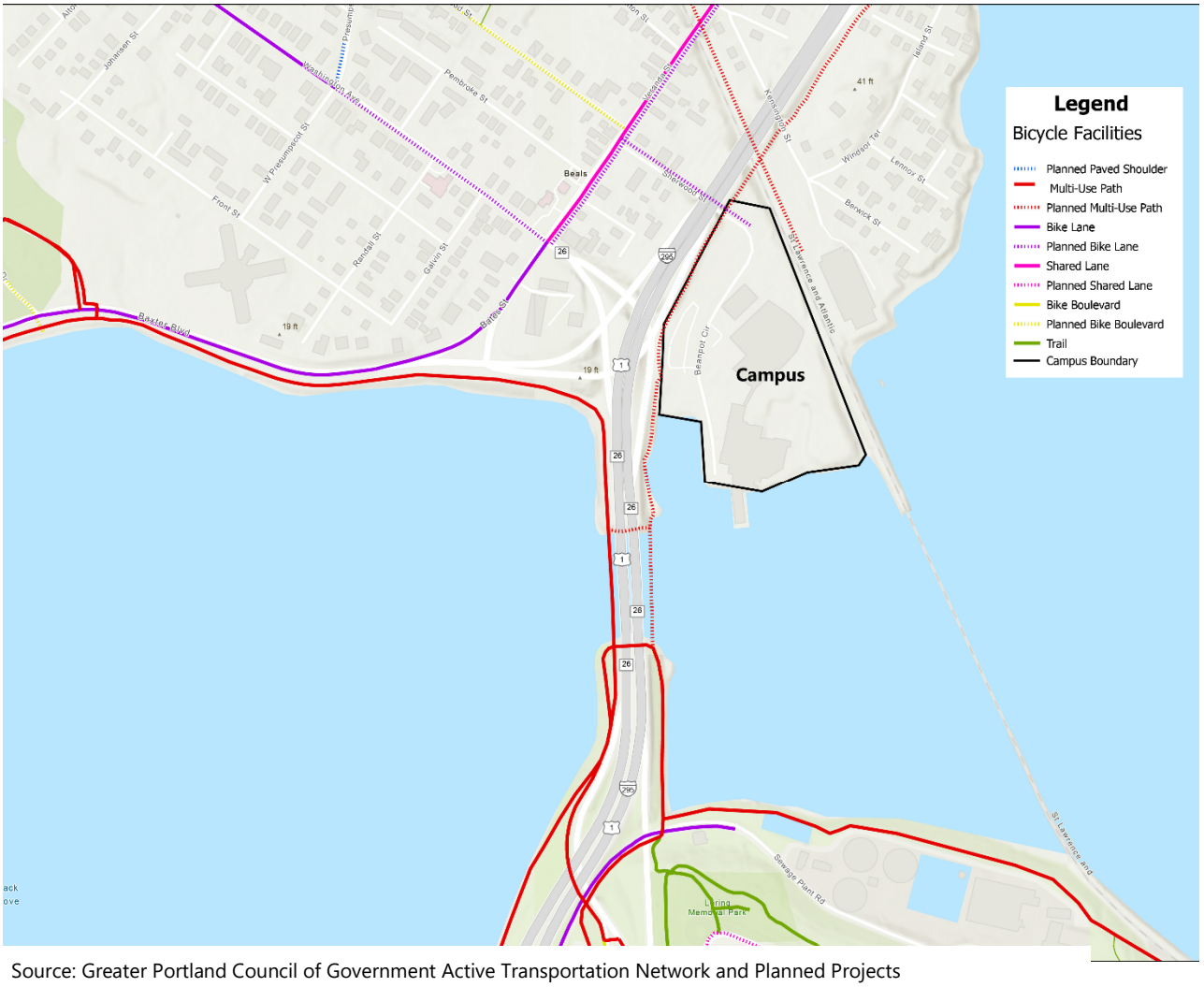
The City of Portland and Tandem Mobility have partnered to provide a bike share system in Portland. There are over 200 bicycles at over 40 stations predominately throughout the Portland peninsula. Pedal bikes and electric bikes are available by the minute and memberships are available on a monthly or yearly basis. There are currently no Portland BIKESHARE locations within the East Deering neighborhood in close proximity to the site, however there are a few on the East End across Tukey's Bridge. There is an opportunity to explore providing a new station on the campus which would expand the BIKESHARE network to the East Deering neighborhood.

Figure 4 presents the existing and potential future bicycle facilities surrounding the campus.

TDM strategies says WILL provide bike share station.

[1] Baxter Boulevard| Bates Street| Veranda Street Bikeway Project https://portland.civilspace.io/en/projects/better-bikeways-initiative

Figure 4 Existing and Potential Future Bicycle Facilities



Source: Greater Portland Council of Government Active Transportation Network and Planned Projects
https://gpcog.maps.arcgis.com/apps/View/index.html?appid=d5d7dbbc69534242b5fd4092c78f26e4

2.4 Public Transit

2.4.1 Existing Conditions

As shown in Figure 5, two bus lines currently stop near the campus: Metro Route 7 and Metro Routes 9A / 9B. Route 7 provides service between Portland and Falmouth with a stop at the Metro Pulse on the Peninsula as well as a stop near the campus at Veranda Street/Sherwood Street approximately a quarter of a mile from the center of the campus. Routes 9A/9B provide circular bus service between downtown Portland and North Deering with service running along Washington Avenue and Congress Street. Route 9A/9B stops on Washington Avenue near the site at Galvin Street and Veranda Street respectively which is under a half mile from the site. Bus transfers can be made at the Pulse and other stops on the Peninsula to reach the rest of Portland and several outlying towns.

Buses run continuously throughout the day, readily accommodating the varied schedules of students and other campus users. Metro BREEZ express bus service to Yarmouth, Freeport, and Brunswick and the Husky Line to Westbrook and Gorham establish a regional footprint for transit service. Ten local and express routes connect the campus to most of the Portland area with no more than one transfer.

During both weekday peak hours Metro Route 7 is expected to operate at 50% or less capacity. The Metro bus policy capacity of 52 passengers per bus was assumed. There are 35 seats per bus and a bus is considered "full" at 150% of the seated capacity. There is one bus per peak hour on this route. In 2023, on an average weekday during the AM and PM hours there were 9 and 22 boardings on Route 7 respectively, which leaves plenty of capacity on Route 7 to accommodate site related traffic.

In addition to the local Metro system, the Portland Transportation Center (PTC) in Thompson's Point provides regional bus and train service. Concord Coach Lines runs bus service from Portland to Boston, Massachusetts, Logan International Airport, and New York City as well as points north of Portland. The Amtrak Downeaster provides train service between Brunswick and Boston with a stop in Portland. Greyhound provides bus service between East Bayside in Portland and Boston, Massachusetts.

The Roux Institute at Northeastern University is currently subsidizing Metro bus passes at 100% for all students faculty and staff who choose to participate.

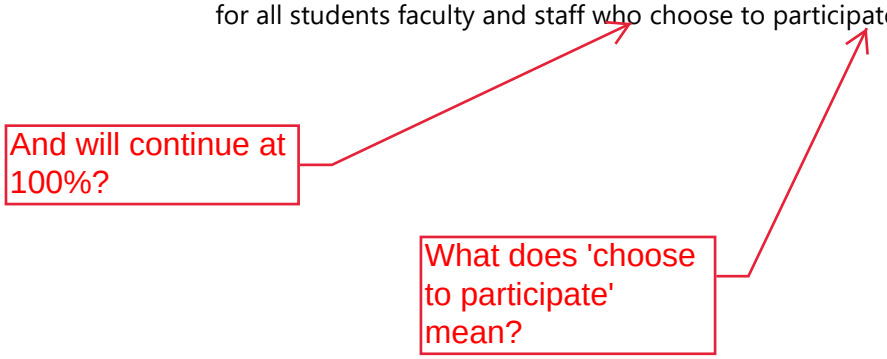


Figure 5 Public Transit Access



2.4.2 Future Opportunities

Metro is contemplating improvements to the transit system throughout Portland. In addition, the Roux Institute at Northeastern University is working with Metro to consider site specific transit accommodation for an on-campus bus stop that would connect the Roux Institute at Northeastern University to other key locations across the City, including housing, additional transportation connections, and partner organizations. The Roux Institute at Northeastern is also working with Metro and MaineDOT to identify park and ride locations where Roux students, faculty and staff can park and use Metro to travel to the site.

2.4.2.1 Transit Together Plan

In January 2023, The Portland Area Comprehensive Transportation System (PACTS) Policy Board approved the Transit Together Plan[2]. As of August 27, 2023, this plan enabled changes to Route 9 to provide more consistent 30-minute headways from 6am to 6pm on weekdays and from about 8am to 6pm on Saturdays. Route 9B will run one hour later in the evening.

In the Spring of 2024, Metro plans to make improvements to Route 7 by extending the route to the Portland Jetport via Congress Street with improved frequency and hours of operation.

[2] Transit Together - https://gpmetro.org/1644/Transit-Together---Route-and-Schedule-Ch

Frequency for Route 7 will improve from 60 to 30 minutes Monday through Saturday and services will be provided until 10pm or 11pm. The Falmouth loops will be eliminated, and Route 7 will use the Shaw's parking lot in Falmouth to turnaround. In conjunction, Route 5 service to the Jetport and Hutchins Drive will be discontinued to improve travel time between Portland and the Maine Mall. In addition, microtransit service will be implemented in east Falmouth. Microtransit riders within the zone will be able to request a ride using a smartphone app or phone call. These changes significantly increase the frequency and daily service to the campus.

2.4.2.2 Other Metro Opportunities

Metro is in the preliminary planning stages of studying how to extend Route 7 service along US Route 1 to Yarmouth. This extension could provide a bus route for campus commuters, with parking at the MaineDOT Exit 15 Park and Ride in Yarmouth.

The Roux Institute at Northeastern University is working with Metro to improve the quality and frequency of transit connections to the campus. Reduction of headways, modification of Route 5 or Route 7 to make a stop at the campus, and construction of a transit stop and turnaround on the campus, are all under consideration to further the convenience of transit for commuting to and from campus. The Roux Institute at Northeastern University will continue to promote and incentivize transit use by subsidizing transit passes for students, staff, and faculty.

Potential DOT projects: the off-ramp that would improve direct access to the campus

2.5 Ride-Hailing

In addition to driving, transit, walking, bicycling, and carpooling, commuters have the option of using ride hailing services such as Uber, Lyft and/or traditional taxis. Although these services result in vehicle trips to and from the campus, they reduce the parking demand and allow for less vehicle ownership and more flexibility with commute mode choices.

2.6 Current Parking Policies

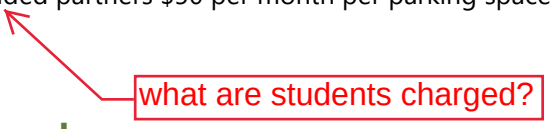
Parking is currently provided to staff, faculty and embedded partners at $50 per month, per spot. There are 176 parking spaces allocated for the Roux Institute at Northeastern University in the on-site garage. Embedded partners and employees who opt out of monthly parking pay $1/hour to park in the garage. Parking for visitors is also provided via a public rate of $5/hour and in adjacent, paid parking lots. Students of the Roux Institute at Northeastern University are not currently charged to park on-site but will be at the future campus.

2.7 Existing TDM Efforts

As part of this TDM plan, the Roux Institute at Northeastern University plans to bolster its current TDM efforts for the permanent campus proposed in East Deering. However, they are currently implementing TDM strategies on the existing campus at 100 Fore Street to help reduce drive alone trips:

- Appointed a transportation coordinator who surveys students, faculty and staff to develop an understanding about mode choice.

- Fully subsidizing transit passes 100% for faculty, staff and students. Posting transit related information in highly visible areas on site. Providing information on transportation commuting options including transit on the Roux Institute at Northeastern University's website.
- Offering convenient, hybrid course formats that blend online and on-site learning thus reducing the demand for commuting.
- Charging staff, faculty and embedded partners $50 per month per parking space.



2.8 Future TDM Framework

Although this document specifically addresses the TDM plan for this phase of development, it is part of a larger TDM framework for the site and supports the continued review of mode share and trip impact and the continual development of additional TDM measures as the site is further developed. Specifically, the Transportation Coordinator will conduct traffic monitoring and employee surveys to identify the mode share as development occurs and identify which of the TDM strategies and alternative modes are more successful at the site. This information will be used in future phases of development to identify accurate impacts and needs and develop additional strategies to best continue to move the needle to reduce vehicle trips generated by the site.

This document outlines a transition from an initial opening year mode share to a mode share at full occupancy of this phase of development that will be consistent with the aspirational mode shares identified for the long term buildout of the site in the zone change process. Future phases will continue to build on the success of this TDM plan and reach mode share targets that continue to reduce vehicular trips.

3

TDM Coordinator

The Roux Institute at Northeastern University will designate a TDM coordinator to oversee the administration of the TDM plan and the annual surveying and reporting process.

The Roux Institute at Northeastern University plans to follow industry best practice by appointing a campus-wide transportation coordinator. The TDM Coordinator will collect data on the TDM progress to ensure it evolves as the site develops. Once the site is operational, the TDM Coordinator will conduct a transportation survey for students, staff, and faculty to establish a baseline for future drive alone mode share reduction goals. They will also collect and disseminate information (including non-automobile travel options) on-site and organize outreach events and campaigns to encourage TDM participation. The TDM Coordinator will promote alternative transportation choices to educate those commuting to and from the campus and coordinate the implementation of TDM strategies to reduce single occupancy vehicle (SOV) trips. In addition, the TDM Coordinator will work with the City of Portland, Metro, GoMaine, car share, and bike share programs to improve non-SOV mode shares. The responsibilities of the TDM Coordinator include the following:

- Promote alternative transportation choices to students, staff, faculty, and visitors to reduce single occupant vehicles (SOV) trips.
- Coordinate the implementation of TDM strategies with students, staff, and faculty and conduct orientations to educate those commuting to and from the campus regarding their transportation options.
- Monitor bike rack usage and make recommendations as needed to accommodate potential growing demand.
- Coordinate with the City of Portland, Metro, GoMaine, car share and bike share, and other potential partners to improve access to non-SOV modes.
- Conduct annual Transportation Monitoring and activities necessary to measure the effectiveness of the TDM program in achieving the mode share reduction target.
- Administer and review TDM surveys on a yearly basis.

- Complete the standard City of Portland TDM Reporting Form, which will summarize how effective the various strategies have been, mode share data based on the surveys and program success and barriers.
- File annual TDM reports by May 15th of each year with the City of Portland.

The TDM Coordinator will be the primary point of contact for students, staff, and faculty regarding the TDM plan. The TDM Coordinator will develop strategies and incentives for students, staff, faculty, and visitors where applicable. The TDM Coordinator will also collaborate with commuters prior to when they start to inform them of the robust network of alternative mode choices available to them.

4

Baseline TDM Data

Baseline travel demand and supply data for the campus has been quantified for the Traffic Movement Permit (TMP) Application being submitted to MaineDOT as part of the site plan review process. Baseline data includes estimated mode split, future trip generation estimates, and proposed parking supply and future demand estimates. Reviewing survey data and how the existing students, faculty and staff are currently commuting to campus, and how they expect to commute to the proposed campus, provides insight to which alternative modes may have the greatest potential to reduce drive alone trips.

4.1 Modal Split

4.1.1 Roux Institute at Northeastern University Transportation Survey

The Roux Institute at Northeastern University conducted transportation surveys on a quarterly basis throughout 2022 and 2023 which collected responses from students, staff, and faculty at the existing 100 Fore Street campus. The survey asked how the respondents commuted to campus and then how they imagine they will commute to the new campus in East Deering. The results of the survey mode share data are presented in Table 2. It is important to note that the data collected slightly varied throughout the time of year. Additionally, the Roux Institute at Northeastern University is an evolving, growing Institute currently in a temporary location and this data is only representative of a portion of students, staff and faculty. Based on feedback collected from the survey, it is anticipated that transit and bicycle trips will increase, walk trips will decrease, and drive trips will slightly decrease due to the proposed campus location and existing transportation system in East Deering. The Roux Institute at Northeastern University will continue to survey on a quarterly basis and make adjustments as circumstances evolve.

Table 2 Transportation Survey Mode Split Data

	Existing Commute at 100 Fore Street		
	August 2022	April 2022	January 2023
Drive	77%	72%	73%
Transit	4%	3%	4%
Walk	13%	16%	19%
Bike	6%	7%	4%
Other	0%	2%	0%

what was response rate to the surveys?

From the August 2022 survey, 135 people responded, of which 40% were students, 35% were full-time staff, 13% were full-time faculty, and 12% were other.

4.1.2 Traffic Movement Permit Mode Split Data

In addition to the data collected as part of the transportation surveys, expected mode share splits assumed in the Traffic Movement Permit (TMP) by land use are also provided in Table 3. The TMP mode splits are slightly more conservative in terms of analyzing vehicular traffic impact on the study area intersections. As additional bicycle and pedestrian connections are constructed in future years, it is likely that those mode shares will increase.

Table 3 TMP Mode Split

Population	Drive	Transit	Walk/Bike
Students	80%	10%	10%
All Other Populations	90%	5%	5%

Source: TMP indicates mode share assumptions presented in the Traffic Movement Permit

4.2 Trip Generation

As part of the TMP application, a trip generation analysis was conducted based on the 2032 development program presented in Table 1 using Institute of Transportation Engineers (ITE) publication, Trip Generation 11th edition as well as a custom trip generation methodology for the academic use of the site. The following assumptions were made to estimate student trip generation based on data from the campus:

- 43% of student enrollment are present on campus each day.
- 40% are daytime students and 60% are evening students.

Mode shares that were previously presented in Table 3, and applicable on site, internal capture trip rates were applied to the trip generation estimate to determine the external vehicle, pedestrian and walk trips as well as transit trips. The resulting estimated trip generation for the campus is presented in Table 4. The campus is expected to generate 237 morning and 521 evening peak hour vehicle trips, 20 morning and 51 evening peak hour transit trips, and 20 morning and 51 evening peak hour pedestrian and bicycle trips.

Table 4 Trip Generation

	Vehicle Trips	Transit Trips	Ped/Bike Trips
AM Peak Hour			
In	227	20	20
Out	10	0	0
Total	237	20	20
PM Peak Hour			
In	276	30	30
Out	245	21	21
Total	521	51	51

Source: Trip Generation Analysis presented in the Traffic Movement Permit

4.3 Proposed Parking Supply/Demand

A parking analysis was performed to estimate parking demand for the Roux Institute at Northeastern University. It was determined that parking demand peaks during the overlap between day and night users. Based on travel patterns of existing daytime and night students, the future enrollment will result in a peak demand of 581 spaces in the opening year and if the auto mode share stays as high as outlined in the TMP, demand would increase to 881 spaces in 2032.

The Roux Institute at Northeastern University is planning on providing parking on campus in a proposed parking garage designed to accommodate 610 vehicular parking spaces and 66 bicycle parking spaces. In addition to the garage spaces, there will be 14 parking spaces provided at grade on site. The parking garage will be constructed in 2027 to accommodate the demand for this phase.

In order to help mitigate the amount of vehicular traffic traveling to the campus, The Roux Institute at Northeastern University is actively exploring opportunities for satellite parking spots at existing park and ride locations within a short commute to the campus via tying into nearby transit routes or a Northeastern University-owned shuttle service.

To ensure parking usage in the structured garage does not exceed the permitted supply for each phase of development, the Roux Institute at Northeastern University will collect annual parking data to determine the number of vehicles parked throughout the day and evening. The TDM coordinator will obtain gate data for in, out, and occupancy counts on an hourly basis during the spring to coincide with the annual survey week. Moving into the future, the TDM coordinator will be working to reduce the automobile mode share to the site so that the garage is able to accommodate campus growth with that parking supply.

All 610 available during Ph 1 instead of the 561 previously proposed for Ph 1 out of a 708 space garage?

5

TDM Mode Split Targets

The TDM plan establishes short-term and long-term modal split targets.

The TDM mode split target includes goals for reducing vehicle trips and increasing multimodal trips. Based on the future transportation system the campus will be supported by and TDM measures that will be implemented, the short and long-term targets that are proposed as part of this TDM plan are presented in Table 5. The mode share goals are within range of the City's *One Climate Future* document that sets a Key Transportation Milestone that by 2035, 26% of trips in the city will use alternative transportation modes, (up from 12%)[3]. The long-term goals are based on mode splits presented as part of the approved Institutional Development Plan for the Roux Institute at Northeastern University. The Roux Institute at Northeastern University is committed to implementing the TDM strategies presented in the following Section 6 to work towards achieving these mode split targets. The targets will be reviewed and updated based upon the annual TDM reporting process.

Table 5 Automobile Mode Split Targets

Population	Mode Split Targets	
	Short-term	Long-term
Students	80%	65%
All Other Populations	90%	75%

[3] https://www.oneclimatefuture.org/wp-content/uploads/2021/02/OneClimateFuture_FinalJan2021_Downsized.pdf

6

Mode Split Target Strategies

The TDM plan includes a set of strategies aimed at achieving the TDM goals described above. The strategies are targeted to students, staff, and faculty traveling to and from the campus in East Deering. The Roux Institute at Northeastern University is committed to enhancing the multimodal transportation systems around the campus including providing improved pedestrian and bicycle facilities and transit access/service.

As part of the quarterly transportation survey, the Roux Institute at Northeastern University gathered data on which TDM strategies would more likely encourage students, staff, and faculty to commute differently to the proposed campus. The feedback indicates that Roux Institute at Northeastern University commuters are most likely to shift to a different mode share when showers, lockers and bike storage is available, there is a credit system for sustainable commuting, a bus route is provided from downtown, a park and go is available and bike share is available for commuters. Additional open-ended comments were provided and are also reflected in the TDM strategies presented in this section.

Table 6 below presents the strategies that the Roux Institute at Northeastern University is committed to fulfilling which are grouped into three main categories: Infrastructure/Transit/Mobility Improvements and Contributions; Incentives; and Information/Education/Marketing. These commitments include timelines for implementation.

Table 6 TDM Strategies – Commitments More possible strategies needed/TBD via the TMP/Site Plan discussions			Timeline Years	
Category	**Strategy**	**Targeted User/Group**	**Short-term (0-2 Years)**	**Long-Term (2+ Years)**
Investments				
Public Transit Access	Work with Metro to provide a new transit stop on campus. The transit stop will include a shelter and provide real-time bus information as well as a turnaround area on site.	Students/Staff/Faculty/Visitors	Implement	
Public Transit Access	Subsidize the purchase of student and staff/faculty bus passes. what level, 100%	Students/Staff/Faculty	Implement	
Bicycle Access	Secured bicycle parking will be provided via 100 exterior and 66 interior spaces. This equates to over 3 times the City of Portland Land Use Code parking requirements totaling 166 bicycle spaces. 66 interior spaces where? in the garage or elsewhere	Students/Staff/Faculty/Visitors	Implement	Continue to monitor and provide additional bicycle parking if demand increases.
Bicycle Access	Improve Sherwood Street by adding a shared use path. add to 'Future Commitments'	Students/Staff/Faculty/Visitors	Implement Sherwood Street bicycle lanes.	
Bicycle Access	Provide on-site showers and lockers	Students/Staff/Faculty	Implement	
Pedestrian Access	Improve the pedestrian network by providing a new sidewalk and a shared use path along Sherwood Street and a new crosswalk across Sherwood Street at Veranda Street.	Students/Staff/Faculty/Visitors	Implement Sherwood Street improvements.	
Constrained Parking	Parking on-site will be constrained to a parking garage designed to accommodate 625 parking spaces in addition to 14 at-grade parking spaces.	Students/Staff/Faculty	Implement	Ongoing parking management as long-term phasing is completed.
Water Access/Marine Feature	Build a modern pier over the footprint of the current pier, in order to accommodate water shuttles and taxis.	Students/Staff/Faculty/Visitors		Implement
Incentives				
Flexible Work and/or On-line Learning	Provide a hybrid course format that allows online and on-site learning.	Students/Staff/Faculty	Implement	
Flexible Work and/or On-line Learning	Flexible scheduling (ability to start-stop some class hours outside of peak travel periods, e.g.)	Students/Staff/Faculty	Implement	
Parking Pricing	Parking charge for students, staff/faculty (unbundled parking costs - not included with tuition and not provided as a benefit to staff/faculty)	Students/Staff/Faculty	Implement	
Preferential Parking	Prioritize convenient garage parking for carpools.	Students/Staff/Faculty	Implement	
	Carpools will receive reduced price parking.	Students/Staff/Faculty	Implement	
Programmatic Incentives	Join the Emergency Ride Home program through the GOMAINE program.	Students/Staff/Faculty	Implement	
Electric Vehicle Parking	Monitor EV parking demand study and increase the chargers, their power, and number of EV-ready spaces as demand dictates.	Students/Staff/Faculty/Visitors		Monitor usage and provide additional EV charging infrastructure as needed.
Information/Education/Marketing				
Education on Travel Choices	Join GOMAINE. Encourage staff/faculty to join Go Maine & Record “green trips”.	Students/Staff/Faculty	Implement	
Education on Travel Choices	Provide a website that will present travel choices to campus available to students/staff/faculty with links to resources. Information on bicycling routes, bicycle parking infrastructure, and walking infrastructure will be provided on the website	Students/Staff/Faculty/visitors	Implement	
Education on Travel Choices	The TDM coordinator will send out organizational emails promoting alternative modes/TDM program to staff/faculty and students.	Students/Staff/Faculty	Implement	
Education on Travel Choices	The TDM coordinator will facilitate carpools by maintaining a database of interested parties; commuters will be matched with others who live near them or can access a park and ride location along their route. The Roux Institute at Northeastern University will also participate in the Maine DOT/Maine Turnpike Authority GOMAINE, which facilitates carpools across nearby sites and provides participants with rewards for carpooling	Students/Staff/Faculty	Implement	
Education on Travel Choices	The TDM coordinator will provide new students, staff, and faculty with orientation packets describing non drive-alone commutes and incentives.	Students/Staff/Faculty	Implement	
Education on Travel Choices	Provide transit maps and schedules on-campus.	Students/Staff/Faculty/Visitors	Implement	

Table 6 TDM Strategies – Commitments			Timeline Years	
Category	**Strategy**	**Targeted User/Group**	**Short-term (0-2 Years)**	**Long-Term (2+ Years)**
Education on Travel Choices	Provide a real-time electronic screen displaying transit information – 'Next Bus' at bus stop.	Students/Staff/Faculty/Visitors	Implement	
Future Investments	Also added to the lobbies of the two main Ph 1 buildings for increased visibility of multimodal options?			
Bicycle Access	Installing a bike repair station Put in narrative	Students/Staff/Faculty/Visitors	Implement	
Bicycle Access	Consider providing electric bike charging	Students/Staff/Faculty/Visitors		Investigate through surveys to determine if this would be effective and used.
Portland BIKESHARE	Establish a new BIKESHARE station on campus. Currently, there are no BIKESHARE stations located in East Deering. Put in narrative	Students/Staff/Faculty/Visitors	Implement	
Car Share	Explore providing one car share vehicle on campus.	Students/Staff/Faculty		Provide car share parking as future program is developed.

7

Monitoring and Reporting Plan

Program monitoring and reporting are important components of a successful TDM program because they provide a quantitative benchmark of the program's effectiveness in reducing single occupancy vehicle trips and resulting parking demand over time. The monitoring process provides feedback on whether progress toward the TDM targets is being made. The TDM Coordinator will use the information gathered through the monitoring plan to direct the ongoing implementation of the TDM program, allowing for adjustments and the introduction of new strategies.

The TDM Coordinator will be responsible for monitoring the efficacy of the TDM plan and making adjustments to the plan as needed to achieve modal split targets.

An annual survey will be administered to gather data for student, staff, and faculty commuting characteristics. Surveys provide a qualitative understanding of how well TDM program elements are working. This survey will ask respondents how they commuted to campus for the last five days and will provide a comprehensive list of mode share choices. Additional information including vehicle ownership, parking costs, and mode share barriers and incentives will also be collected. Parking utilization count data will be obtained annually to support the monitoring process. The TDM Coordinator will obtain data to quantify the hourly in, out, and number of parked vehicles in the garage. This data will help to establish the resulting parking demand for the enrollment at that time.

Should additional data such as bicycle parking counts or other TDM tracking efforts be needed to support the monitoring effort, additional data will be collected. This might include the following data needs:

- Should bicycle parking utilization counts be needed to support the monitoring process, the number of bicycles parked on campus will be tracked. This data will be reviewed for trends in

bicycle usage over time to determine if bicycle parking is adequate and meets the needs of the bicyclists.

› The TDM Coordinator will work with Metro to track the transit usage of commuters via the pass program implemented. The data for the same time period as outlined above in the surveys will be obtained and reviewed.

The results of monitoring effort will be reported to the City of Portland on an annual basis by May 15th using the standard reporting tools provided by the city.



The Roux Institute at Northeastern University

TMP Section 7 – Traffic Impact Study

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Table of Contents

1 Introduction 1

Project Area 1
Development Program 2

2 Study Area 3

3 Existing Traffic Volume Data 4

4 Proposed Uses in the Study Area 6

5 2032 No Build Traffic Volumes 7

6 Trip Generation 9

Site-Specific Trip Rates 10
Internal Capture 13
Mode Share 14
Peak Hour Trips 14
Proposed Parking Supply / Demand 15

7 Trip Distribution 17

8 Trip Assignment 19

9 Pedestrian, Bicycle, and Transit Modes Assessment 24

Pedestrian Facilities 24
Bicycle Facilities 29
Public Transit 31
Vehicular Facilities 34

10 Transportation Demand Management 36

TDM Coordinator 36
TDM Mode Split Targets 37
TDM Strategies 37
Monitoring and Reporting Plan 37

11 Traffic Capacity Analysis 40

Operation Mitigation 47

12 Transit Analysis 54

Step 1: Existing Bus Route 7 Capacity 54

Step 2: Existing Bus Route 7 Ridership 55
Step 3: Existing Bus Route 7 Utilization 55
Step 4: Development of Project Generated Transit Trips 55
Step 5: Future Metro Changes to Bus Route 7 56
Step 6: 2032 Build Condition Bus Route 7 Utilization 56
Additional Bus Route 7 Information from Metro: 56

13 Pedestrian and Bicycle Analysis 57

Pedestrian Level of Service 57
Bicycle Capacity 58

14 Crash History 59

Roadway Sections 60
Intersections (Not HCLs) 61

15 Sight Distance 62

16 MUTCD Signal Warrant Analysis: Bates Street at Baxter Boulevard 63

Traffic Volumes 63
Seasonal Adjustment 64
Annual Growth 64
24-Hour Projection 64
Warrant 1 – Eight Hour Vehicular Volume 64
Warrant 2 – Four Hour Vehicular Volume 64
Warrant 3 – Peak Hour Vehicular Volume 65
Warrant 4 – Pedestrian Volume 65
Warrant 5 – School Crossing 65
Warrant 6 – Coordinated Signal System 65
Warrant 7 – Crash Experience 65
Warrant 8 – Roadway Network 66
Warrant 9 – Intersection Near a Grade Crossing 66
Signal Warrant Results 66

17 MUTCD Signal Warrant Analysis: Sherwood Street at Veranda Street 67

Traffic Volumes 67
Seasonal Adjustment 68
Annual Growth 68
24-Hour Projection 68

Warrant 1 – Eight Hour Vehicular Volume 68
Warrant 2 – Four Hour Vehicular Volume 68
Warrant 3 – Peak Hour Vehicular Volume 69
Warrant 4 – Pedestrian Volume 69
Warrant 5 – School Crossing 69
Warrant 6 – Coordinated Signal System 69
Warrant 7 – Crash Experience 70
Warrant 8 – Roadway Network 70
Warrant 9 – Intersection Near a Grade Crossing 70
Signal Warrant Results 70

18 Recommendations 71

Sherwood Street Improvements 71
Sherwood Street Traffic Calming 71
Signal / Intersection Improvements 72
Traffic Monitoring 72
Safety Improvements 72
Metro Bus Improvements 72
On-Site Multi-Use Path 73

19 Summary and Conclusions 74

List of Tables

Table No.	Description	Page
Table 1	Proposed Uses	2
Table 2	Development Program by Land Use	9
Table 3	Academic Trips – Time of Day Distribution	11
Table 4	Affiliated User and Special Event Distribution	12
Table 5	Total Unadjusted Trips	12
Table 6	Pedestrian Trips Between Uses, AM Peak Hour	13
Table 7	Pedestrian Trips Between Uses, PM Peak Hour	13
Table 8	Peak Hour Trips	14
Table 9	Drive Mode Split Targets	15
Table 10	Trip Distribution	17
Table 11	Drive Mode Split Targets	37
Table 12	TDM Strategies – Commitments	38
Table 13	Level of Service and Delay Summary	41
Table 14	Signalized Intersection Capacity Analysis	42
Table 15	Unsignalized Intersection Capacity Analysis	45
Table 16	Signalized Intersection Capacity Analysis	49
Table 17	Unsignalized Intersection Capacity Analysis	52
Table 18	Metro Ridership	55
Table 19	Existing Peak Bus Utilization	55
Table 20	Peak Hour Project Generated Transit Trips	56
Table 21	2032 Build Condition Bus Route 7 Peak Hour Utilization	56
Table 22	Pedestrian Level of Service Criteria	57
Table 23	Signalized PLOS Summary	58
Table 24	High Crash Locations	59
Table 25	MaineDOT Sight Distance Requirements	62

List of Figures

Figure No.	Description	Page
Figure 1	2024 Existing Traffic Volumes	5
Figure 2	2032 No-Build Traffic Volumes	8
Figure 3	Trip Distribution	18
Figure 4	Project Generated Trip Assignment	20
Figure 5	2032 Build Traffic Volumes	21
Figure 6	Bicycle Inbound Trips Am and PM	22
Figure 7	Bicycle Outbound Trips AM and PM	22
Figure 8	Pedestrian Inbound Trips AM and PM	23
Figure 9	Pedestrian Outbound Trips AM and PM	23
Figure 10	Existing Pedestrian Infrastructure	25
Figure 11	Origins and Destinations	26
Figure 12	Existing Pedestrian Infrastructure Conditions	28
Figure 13	Existing Bicycle Network	30
Figure 14	Existing Public Transit Services	33
Figure 15	Existing Roadway Network	35
Figure 16	On-Site Multi-Use Path	73

1

Introduction

This Traffic Impact Study (TIS) is provided as Section 7 of the Traffic Movement Permit (TMP) application for the proposed Roux Institute at Northeastern University mixed use campus in the East Deering neighborhood. The following TIS identifies the transportation impacts of the proposed project. This study incorporates comments received at the project Scoping Meeting held on December 13, 2023, with MaineDOT and the City of Portland.

The Roux Institute at Northeastern University is a graduate education and research institution temporarily operating at 100 Fore Street in the Old Port neighborhood. The development proposed in this TIS is a relocation of the Institute to the former B&M Baked Beans site at 1 Beanpot Circle. In its permanent waterfront location in East Deering, the Roux Institute at Northeastern University will continue to provide educational, research, and collaborative programs in areas including artificial intelligence, computer and data sciences, digital engineering, advanced life sciences, and medicine. The Roux Institute at Northeastern University offers post-graduate degrees and certifications, conducts research, assists start-ups, and partners with private, public, and non-profit organizations and is proposing to redevelop the B&M Baked Beans facility to establish a permanent campus.

Project Area

The proposed waterfront site is bounded by Sherwood Street to the north, I-295 to the west, Casco Bay to the south, and the MaineDOT Berlin Subdivision to east. The site is located adjacent to a Marina and across I-295 from a residential neighborhood comprising of single and multifamily homes as well as a commercial area which includes restaurants, bars, auto mechanics, and offices. Sherwood Street provides access to the site via Veranda Street.

The parcel was previously zoned I-M (industrial) and had a trip pattern typical of shift work. The factory has been closed since 2021 while the site awaits redevelopment. The parcel is now zoned B-5 (urban commercial business) with an Institutional Overlay.

Development Program

The campus will be anchored by the 240,000 square foot Learning, Research, and Collaboration building housing most of the academic programs. The campus will also open with the 58,000 square foot Bean Building housing a start-up incubator program. By 2032, the campus plans to accommodate 3,123 graduate students in addition to the ancillary users shown in Table 1. The campus will also have dining and an on-site day care center for children of students and staff. In addition to its academic offerings, the campus will benefit the community by providing open space along the waterfront, active transportation accommodations throughout the site, job creation, innovation space, and will contribute to economic growth.

Table 1 Proposed Uses

Program Component		2032 Build-Out
Roux Institute at Northeastern University	Graduate students	3,123 students
	Faculty, Staff, and Researchers	300 staff
	Embedded startup	100 staff
	Signature Partners	64 staff
	Affiliated Users	100 visitors
	Special Events (daily)	150 attendees
Day care center		50 Children
Academic Café		8,000 sf

The campus will open with a 625-space parking structure with 14 exterior vehicle parking spaces (639 total spaces). All on-site parking will be paid parking, and a parking office will be created to manage permitting and enforcement for the campus. Parking costs and regulations may vary between categories of users (students, staff, faculty, visitors, etc.). Parking will be shared by all uses, not assigned to programs or buildings. In addition to bicycle parking around the site, secure storage for 66 bicycles will be provided inside the parking structure.

The site plan is shown in Attachment 7A.

2

Study Area

The study area intersections for the project are based on the requirements for inclusion criteria set forth by MaineDOT. The intersection parameters and thresholds are as follows:

- Development entrances and exits
- First major intersection in either direction from the Development entrances and exits
- All intersections where, during any one-hour period, traffic attributable to the proposed Development equals or exceeds:
  - 25 left turn movements per lane; or
  - 50 through and/or right turn movements per lane

Based on the above criteria, the study area intersections for the proposed development were determined as outlined below and were confirmed at the Scoping Meeting:

- Veranda Street at Sherwood Street
- Washington Avenue/I-295 Ramps at Veranda Street/Bates Street
- Bates Street at Baxter Boulevard/I-295 Ramps
- Washington Avenue at Presumpscot Street
- Washington Avenue at Kidder Street/E Kidder Street
- Veranda Street at I-295 SB Ramps/Wordsworth Street
- Veranda Street at I-295 NB Off-Ramp

3

Existing Traffic Volume Data

Turning movement count data was collected for the study area intersections previously listed in Section 2: Study Area. Traffic data was collected on Wednesday May 31, 2023 for the following intersections:

- Veranda Street at Sherwood Street
- Washington Avenue/I-295 Ramps at Veranda Street/Bates Street
- Washington Avenue at Presumpscot Street
- Washington Avenue at Kidder Street

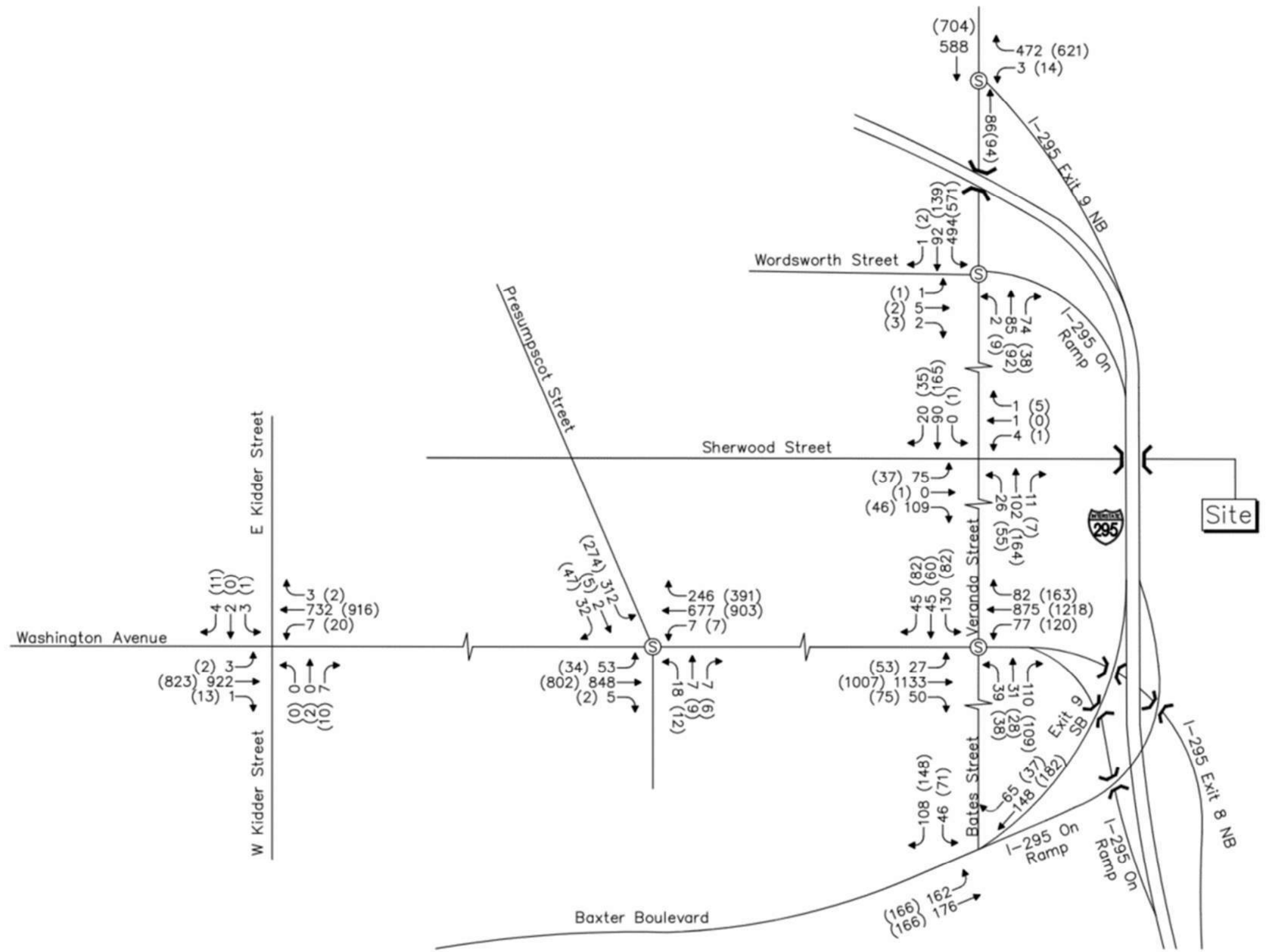
Supplemental counts were conducted on Thursday November 2, 2023 for the following three intersections:

- Bates Street at Baxter Boulevard/I-295 Ramps
- Veranda Street at I-295 SB Ramps/Wordsworth Street
- Veranda Street at I-295 NB Off-Ramp

Data was collected during the typical peak commuter peak periods, 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. The network peak hour occurred from 7:45 AM to 8:45 AM and 4:15 PM to 5:15 PM at the study area intersections.

Weekly mean factors published by MaineDOT were used to adjust the traffic counts to represent the 30th highest hour of the year based on the urban classification of the roadway. The May counts were increased by a factor of 1.01 and the November counts were increased by a factor of 1.08 to represent the 30th highest hour of the year. Since the counts were conducted in 2023, a half a percent of growth was applied to account for a 2024 Existing conditions study year. The resulting 2024 Existing conditions traffic volumes are illustrated in Figure 1 below.

Figure 1 2024 Existing Traffic Volumes



4

Proposed Uses in the Study Area

Vehicle traffic attributed to projects that have been approved but are not yet occupied as well as projects that have applied for approval has been quantified and is included in the 2032 No-Build traffic volumes. The background projects listed below were confirmed at the project scoping meeting. The locations of these projects have been mapped and are provided in Attachment 7B.

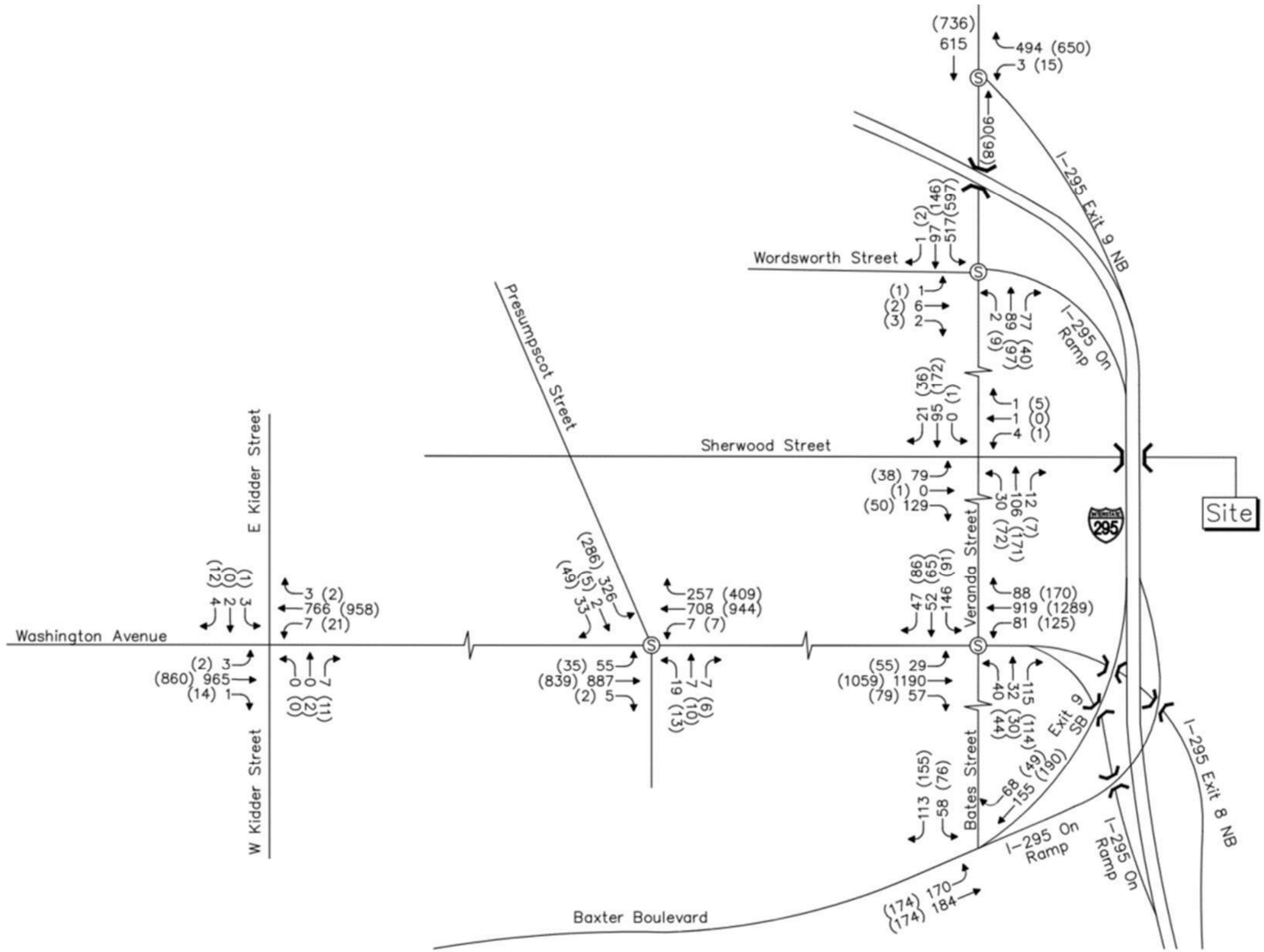
- Front Street Housing Redevelopment: The Portland Housing Authority is completing a mixed-income family housing development at 34 West Presumpscot Street in Portland. Fifty units of public housing were demolished and a total of 113 new mixed-income family units will be constructed once Phase 2 is complete. Phase 1 of the project started in 2020 and included the construction of 60 units. Up to 53 additional units are under construction as part of Phase 2 and the vehicle trips associated with this phase are included in the 2032 No-Build traffic volumes.
- Winchester Woods Apartments: This project was completed in 2023 and includes 48 rental apartment units at 17 Winchester Drive in East Deering Portland. All trips associated with this project are included in the 2032 No-Build traffic volumes.
- 218-220 Washington Avenue: This project proposes the construction of 45 condo units at 218-220 Washington Avenue. A review of likely travel patterns results in little to no trips passing through this study area.

5

2032 No Build Traffic Volumes

The 2024 Existing Conditions volumes were increased by half a percent per year to a future horizon year of 2032 when the proposed campus is anticipated to be fully open. Vehicle traffic associated with the background projects listed in *Section 4: Proposed Uses in the Study Area* were added to the adjusted 2024 Existing Conditions volumes. The resulting 2032 No-Build traffic volumes are shown in Figure 2 below.

Figure 2 2032 No-Build Traffic Volumes



Legend:
XX = AM Peak Hour
(XX) = PM Peak Hour

6

Trip Generation

Trip generation estimates for the Project are based on the 2032 development program presented in Table 2. The student population is modeled based on anticipated population profiles and existing entries and exits at the Fore Street site. Other uses and users are modeled using the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*.

For each use, trip generation was calculated for a weekday (full 24-hour period). This development has disparate uses whose trips will peak at different times of day. To accurately describe this profile, 24-hour distributions for each use were overlaid to identify the time and magnitude of the campus' peak times. Table 2 lists the method used for each use's rate and time of day distribution.

Table 2 Development Program by Land Use

Category	Unit	ITE Land Use Code[1]
Graduate students	Students	*Non-ITE (see narrative)*
Faculty, Staff, and Researchers[2]	Employees	*710 General Office*
Embedded startups	Employees	*710 General Office*
Signature Partners	Employees	*710 General Office*
Affiliated Users	Daily Visitors	*Non-ITE (see narrative)*
Special Events	Daily Attendees	*Non-ITE (see narrative)*
Day care	Children	*565 Day Care Center*
Academic Café	Gross floor area	*932 High-Turnover Restaurant*

1 ITE Trip Generation Manual, 11th Edition

2 Staff in instructional or other student-facing roles (25% of total) were assigned to the student time-of-day distribution.

Site-Specific Trip Rates

Trip rates developed specifically for the Roux Institute at Northeastern University were developed for students, affiliated users, and special events. 25% of staff will also follow the student distribution.

The Roux Institute has long indicated that only a small portion of students is on campus at any one time. In January 2023, the Roux Institute surveyed its students in order to understand existing campus visits. The data showed that 15% of students visited campus every weekday, 7% visited campus 4 days per week, 16% visited 3 days per week, 20% visited twice a week, 24% visited once a week, and the remainder less than four times a month. On average, this represents 43% of the student population being on campus each day. Most classes are in the evening rather than the day, but this will become more balanced at the new campus, with a 40/60 split of day/evening users by 2032. Taken together, these projections result in the following base assumptions for student trip generation:

- 43% of student enrollment travels to campus each day.[1]
- 40% are daytime students and 60% are evening students.[2]

A likely bell curve distribution for student arrivals and departures was developed but additional information was requested by the City and MaineDOT. To better anticipate the spread of student arrivals and departures throughout the day, a door count was conducted at the 100 Fore Street building on October 3rd, 2023. This count was converted to the time-of-day arrival and departure pattern for each student group shown in Table 3.

[1] January 2023 student survey

[2] Split provided by Northeastern University based on enrollment records and projections

Table 3 Academic Trips – Time of Day Distribution

	Day Students		Night Students	
Time	**In**	**Out**	**In**	**Out**
7:00 AM	10%			
8:00 AM	25%			
9:00 AM	20%			
10:00 AM	25%			
11:00 AM	20%			
12:00 PM				
1:00 PM				
2:00 PM		10%		
3:00 PM		25%		
4:00 PM		30%	20%	
5:00 PM		30%	35%	
6:00 PM		5%	20%	15%
7:00 PM			10%	15%
8:00 PM			10%	15%
9:00 PM			5%	35%
10:00 PM				20%
Total	**100%**	**100%**	**100%**	**100%**

Site-specific trip profiles were also developed for special events and affiliated users (miscellaneous visitors not captured in other categories). The Roux anticipates having up to 150 people per day visit the campus for special events. Twenty-five of these are anticipated to visit the campus for an all-day program or training, 25 of these are anticipated to attend a lunch meeting, and 100 of these are anticipated to attend a reception or other after work/evening program. In addition to special events, a placeholder was developed for other site users who may visit the campus for the day. The Roux anticipates up to 25 of these affiliated users may be on the campus on a typical day. These profiles are shown in Table 4.

Table 4 Affiliated User and Special Event Distribution

Time	Affiliated Users 25 persons/day		Special Events – Day 25 persons/day		Special Events – Lunch 25 persons/day		Special Events – Night 100 persons/day	
	In	Out	In	Out	In	Out	In	Out
7:00 am	10%		20%					
8:00 am	20%		60%					
9:00 am	40%		20%					
10:00 am	20%							
11:00 am	10%				80%			
12:00 pm					20%			
1:00 pm						20%		
2:00 pm						80%		
3:00 pm		10%						
4:00 pm		20%		20%			10%	
5:00 pm		40%		60%			50%	
6:00 pm		20%		20%			40%	20%
7:00 pm		10%						50%
8:00 pm								30%

The profiles provided were applied to the number of people in each population anticipated to be on campus in a given day. The unadjusted ITE trip generation was calculated for the remaining uses on the campus. The resulting person trip generation for the weekday AM and PM peak hours is presented in Table 5.

Table 5 Total Unadjusted Trips

Land Use	AM Peak Hour			PM Peak Hour		
	Origin (Exiting)	Destination (Entering)	Total	Origin (Exiting)	Destination (Entering)	Total
Graduate students	134	0	**134**	282	161	**443**
Bean Building[1]	103	24	**127**	29	114	**143**
Faculty, Staff, and Researchers[2]	8	0	**8**	16	9	**25**
Affiliated Users	20	0	**20**	0	40	**40**
Special Events	15	0	**15**	50	15	**65**
Day care	13	13	**26**	17	19	**36**
Academic Café	15	13	**28**	44	29	**73**
Total	**308**	**50**	**358**	**438**	**387**	**825**

1 ITE Trip Generation Manual, 11th Edition LUC 710 General Office (Embedded Startups, Faculty, Staff, and Researchers, and Signature Partners.

2 Staff in instructional or other student-facing roles (25% of total) were assigned to the student time-of-day distribution.

Internal Capture

Dining and childcare are planned to be developed as ancillary services for the student and employee population. Apart from their own employees, they will not generally attract external trips. To account for this and the crossover between student and office populations (typically students involved with an on-site startup), targeted internal capture reductions were calculated for these specific cases.

Calculations for internal trips were made on the following assumptions:

- All trips to/from the cafeteria are internal, made by either students or staff
- 80% of trips exiting the day care in the AM are to another on site use, and 80% of trips entering the day care in the PM originate on-site
- 10% of the office/lab/startup workforce are students who will combine trips

Table 6 and Table 7 show the resulting internal trip counts.

Table 6 Pedestrian Trips Between Uses, AM Peak Hour

			Total Entering Destination					
			134	20	15	103	13	15
			Students	Affiliated Users	Special Events	Office	Day Care Center	Cafeteria
Total Exit	**Origin**	0	Students					
		0	Affiliated Users					
		0	Special Events					
		24	Office	2				15
		13	Day Care Center			10		
		13	Cafeteria	6		7		

Table 7 Pedestrian Trips Between Uses, PM Peak Hour

			Total Entering Destination					
			282	0	50	29	17	44
			Students	Affiliated Users	Special Events	Office	Day Care Center	Cafeteria
Total Exit	**Origin**	161	Students			3		22
		40	Affiliated Users					
		15	Special Events					
		114	Office	11			14	22
		19	Day Care Center					
		29	Cafeteria	14		15		

Mode Share

The Roux Institute at Northeastern University is anticipating that a significant percentage of trips to campus will be made by alternative modes (walking, biking, and transit). During the Institutional Development Plan (IDP) process, Ideals and the Roux Institute set aspirational goals for the mode shares associated with the build out of the site. The initial phase will include academic space, business partners, a startup incubator, day care, and a café.

Anticipated future infrastructure investments will significantly increase the appeal of biking and walking to campus. The site will also be well-served by transit and Metro plans headway reductions and more frequent service to the peninsula. The site plan includes a bus stop and layover area, and the applicant is in discussions with Metro to further reduce headways and other improvements to transit in the area.

The applicant has elected to calculate trips conservatively in this permit. As a result, the auto mode share used for permitting is higher than the internal and IDP goals. These shares will be more realistic in the campus' first years and likely shift more towards alternative modes as those options continue to improve.

For this permit, trips have been calculated with a 90% auto mode share, 5% transit, and 5% walk/bike for all users except students, which are calculated with an 80/10/10 split.

Peak Hour Trips

After applying the site-specific or ITE person trip profiles outlined above and adjusting for mode share and internal capture, a 24-hour trip generation profile was created for the campus. The peak volume of external vehicle trips occurs from 8:00-9:00 in the morning and 5:00-6:00 in the evening and is shown in Table 8. Detailed calculations are provided in Attachment 7C.

Table 8 Peak Hour Trips

	AM Peak Hour					PM Peak Hour				
Use	**All Trips**	**Internal Trips**	**Transit Trips**	**Bike/Ped Trips**	**Vehicle Trips**	**All Trips**	**Internal Trips**	**Transit Trips**	**Bike/Ped Trips**	**Vehicle Trips**
Students	134	9	13	13	**100**	443	51	39	39	**314**
Affiliated Users	20	0	1	1	**18**	40	0	2	2	**36**
Special Events	15	0	1	1	**14**	65	0	3	3	**59**
Office	127	34	5	5	**84**	143	64	4	4	**70**
Faculty[1]	8	0	0	1	**7**	25	0	1	2	**22**
Day Care	27	10	1	1	**15**	36	14	1	1	**20**
Café	28	28	0	0	**0**	73	73	0	0	**0**
Total	**359**	**82**	**20**	**20**	**237**	**825**	**202**	**51**	**51**	**521**

1. Portion of staff/faculty that follow the student distribution

Proposed Parking Supply / Demand

A parking analysis was performed to estimate parking demand for the Roux Institute at Northeastern University. It was determined that parking demand peaks during the overlap between day and night users. Based on travel patterns of existing daytime and night students, the future enrollment will result in a peak demand of 581 spaces in the opening year and if the auto mode share stays as high as outlined in the TMP, 881 spaces in 2032.

The Roux Institute at Northeastern University is planning on providing parking on campus in a proposed parking garage designed to accommodate 625 parking spaces with 14 exterior vehicular parking spaces. Although this parking supply will be adequate to serve the initial parking demand, by 2032, parking will be constrained.

To ensure parking usage in the structured garage does not exceed the permitted supply for each phase of development, the Roux Institute at Northeastern University will collect annual parking data to determine the number of vehicles parked throughout the day and evening. Moving into the future, the Roux Institute at Northeastern University will be working to reduce the automobile mode share to the site so that the garage is able to accommodate campus growth with that parking supply.

In order to help mitigate the amount of vehicular traffic traveling to the campus, The Roux Institute at Northeastern University is actively exploring opportunities for satellite parking spots at existing MaineDOT park and ride locations within a short commute to the campus via tying into nearby transit routes or a Northeastern University-owned shuttle service. In addition, as the campus grows, the Roux Institute at Northeastern University will continue to work with Metro to identify and support transit routes in areas that students are living, whether in campus related housing or in neighborhoods in greater Portland.

The constraint to the parking supply by 2032 will result in mode shares that are more in line with the long term mode shares envisioned in the IDP. However, the analysis presented herein, and the resulting impacts on the transportation network, were calculated based on the short term mode shares outlined above and presented in Table 9. Based on the future transportation system the campus will be supported by the short and long-term targets that are proposed are presented in Table 9.

Table 9 Drive Mode Split Targets

Population	Mode Split Targets	
	Short-term	Long-term
Students	80%	65%
All Other Populations	90%	75%

The mode share goals are within range of the City's *One Climate Future* document that sets a Key Transportation Milestone that by 2035, 26% of trips in the city will use alternative transportation

modes[3]. The long-term goals are based on mode splits presented as part of the approved Institutional Development Plan for the Roux Institute at Northeastern University. The targets will be reviewed and updated based upon the annual monitoring.

[3] https://www.oneclimatefuture.org/wp-content/uploads/2021/02/OneClimateFuture_FinalJan2021_Downsized.pdf

7

Trip Distribution

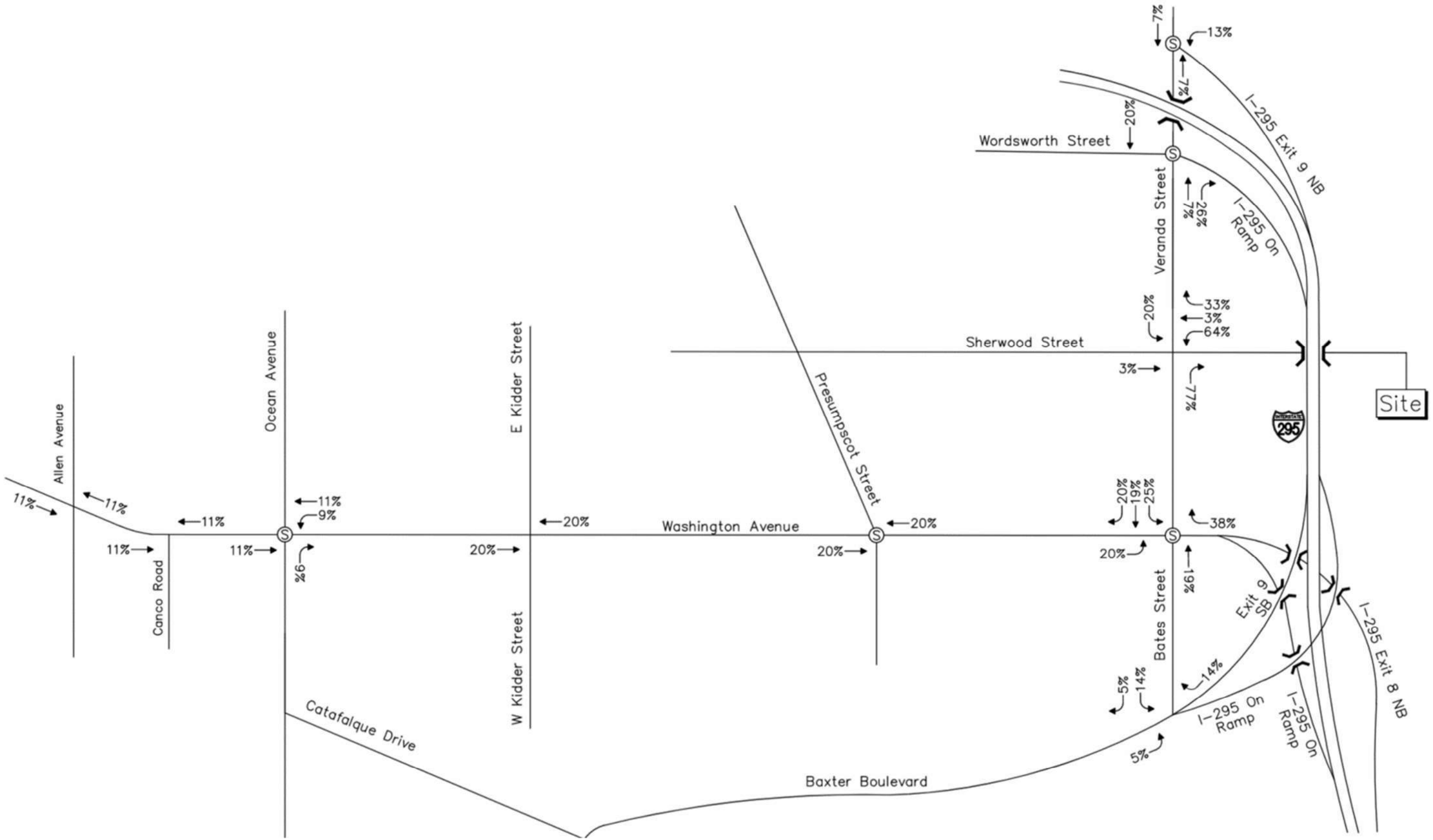
Multiple sources of commuting data were consulted to generate a trip distribution pattern for the site. The initial distribution was developed based on US Census Journey to Work data for the City of Portland. Towns were divided into 9 zones based on their likely routing to the campus. The resulting distribution was compared to a roster of student and employee home addresses from the Fall 2023 semester, which found comparable results and supported using the Journey to Work data set. The distribution and routing is shown below in Table 10.

Table 10 Trip Distribution

Zone	% of Commuters	Routing
I-295 Points North	14%	I-295 to Exit 8
I-95 Points North	3%	Exit 53 to ME-100 to Washington Ave
ME-26/100 Points North/West	8%	Washington Ave
US-302 Points North/West	8%	US-302 to Read St to Ocean Ave to Washington Ave
ME-25 Points West	1%	25B-Warren-Forest-Read-Ocean-Washington
I-295 Points South	51%	Entering: 75% to Exit 8 / 25% to Exit 9. Exiting: 50%/50%.
Baxter Blvd	5%	Baxter to Bates to Veranda
US-1 North	7%	Via Martin's Point Bridge
Presumpscot/Rt 9	3%	Presumpscot to Sherwood

The resulting trip distribution for the proposed project is presented in Figure 3 below:

Figure 3 Trip Distribution



8

Trip Assignment

Using the distribution described above, external vehicle trips were routed through the road network along the study area intersections. All vehicle trips are anticipated to start or end at the end of Sherwood Street. New vehicle trips were assigned according to the routing listed in the previous section. The resulting project generated trip assignment is shown in Figure 4.

Project generated vehicle trips for the morning and evening peak hours were added to the 2032 No-Build volumes to obtain the 2032 Build volumes as shown in Figure 5.

In addition to project generated vehicle trips, pedestrian and bicycle trips for the peak hours were assigned to the study area and can be seen in Figures 6-9.

Figure 4 Project Generated Trip Assignment

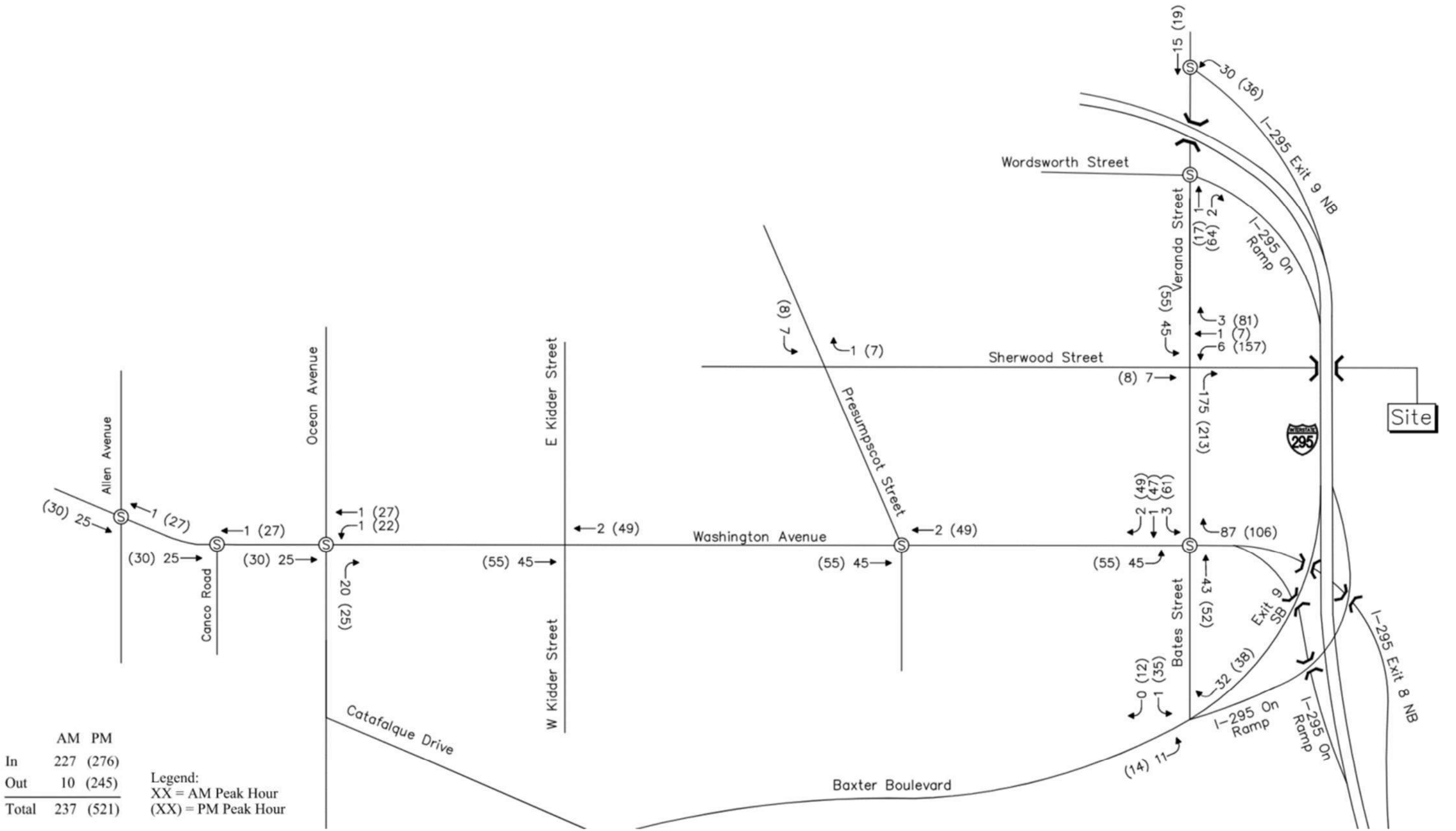


Figure 5 2032 Build Traffic Volumes

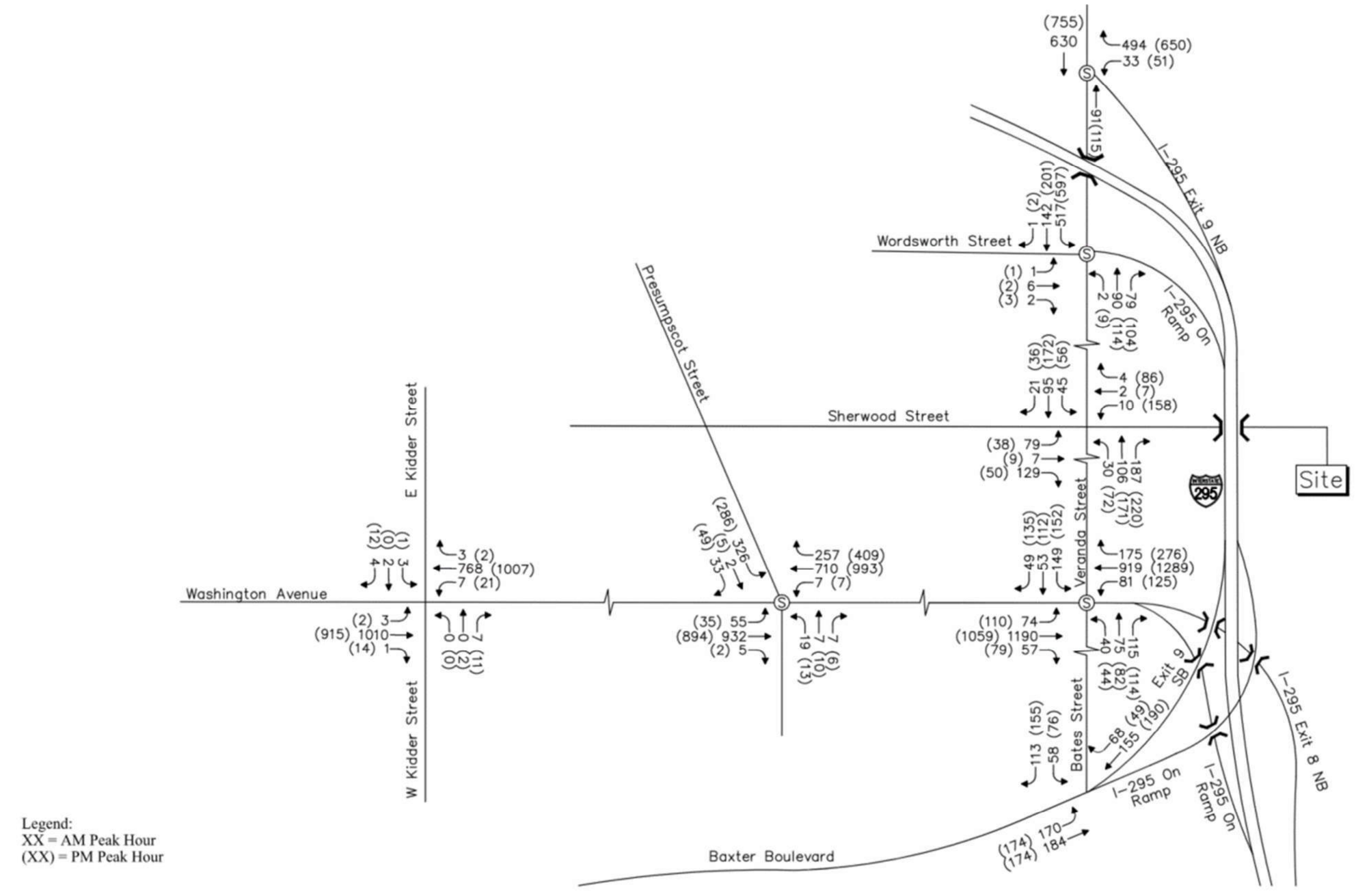


Figure 6 Bicycle Inbound Trips Am and PM



Figure 7 Bicycle Outbound Trips AM and PM



Figure 8 Pedestrian Inbound Trips AM and PM



Figure 9 Pedestrian Outbound Trips AM and PM



9

Pedestrian, Bicycle, and Transit Modes Assessment

A review of the existing conditions in the site vicinity was conducted, including transit, vehicular, bicycle, and pedestrian infrastructure and current commuting patterns.

Pedestrian Facilities

Existing Conditions

As illustrated in Figure 10 and 11, the surrounding East Deering neighborhood provides pedestrian amenities including sidewalks along Washington Avenue and Veranda Street as well as origin / destinations to and from the Roux Institute Campus. A sidewalk runs along the west side of Bates Street but narrows and is periodically blocked by utility poles. There is no sidewalk present on the east side of Bates Street. The Back Cove trail (multi-use path) runs along the Back Cove and Tukey's Bridge near the site.

The main roadway access to the site is via Sherwood Street which consists of a 30-foot-wide roadway in a 50-foot wide right of way and includes non-continuous sidewalk segments mostly on the north side. The pedestrian connectivity to the Portland Peninsula is accessible from the Back Cove Trail across the west side of Tukey's Bridge. The sidewalk connecting from the intersection of Washington Avenue/Veranda Street to the bridge is narrow and adjacent to vehicular traffic on the ramp to I-295. The sidewalk merges with the Back Cove Trail which adds bicycle and pedestrian demand to a narrow, shared use path over Tukey's Bridge. There is no existing direct connection to this shared use path from the campus.

Figure 10 Existing Pedestrian Infrastructure



Source: MaineDOT Public Map Viwer, City of Portland

Figure 11 Origins and Destinations



Figure 12 shows an evaluation of the existing pedestrian facilities on the major streets in the study area that are non ADA-compliant, in poor or condition, or have gaps.

Not all study area intersections provide crosswalks across all approaches. All of the crosswalks at the study area intersections provide ramps. The two study area intersections that have crosswalks but do not have detectable warning plates at the ramps are Bates Street/Baxter Boulevard, and the Sherwood St and Veranda St intersections. These deficiencies are shown in Figure 12.

Figure 12 Existing Pedestrian Infrastructure Conditions



Pedestrian Infrastructure Opportunities

The Roux Institute at Northeastern University will improve pedestrian safety and connectivity to the East Deering neighborhood from the campus by providing continuous pedestrian facilities on both sides of Sherwood Street. An ADA-compliant crosswalk will be implemented across Sherwood Street at Veranda Street. Once on the site, pedestrian facilities will connect site uses and points along the waterfront. Improvements to pedestrian connections will increase the viability of walking as a mode share for the site.

Bicycle Facilities

Existing Conditions

As shown in Figure 13, bicycle facilities are present in the East Deering neighborhood on Washington Avenue including buffered bike lanes north of Presumpscot Street and faded sharrows from Veranda Street to Presumpscot Street. There are also faded sharrows along Veranda Street that continue to Wordsworth Street. Recently new buffered bicycle lanes have been added on both sides of Veranda Street from Wordsworth Street continuing north towards Martins Point Health Care. Bates Street provides a bike lane from Washington Avenue to Baxter Boulevard. The Back Cove trail (multi use path) runs along the Back Cove and Tukey's Bridge near the site and there are bike lanes on either side of Baxter Boulevard.

There are currently no bicycle facilities on Sherwood Street. Similar to the discussion above describing the pedestrian access across the shared use path on Tukey's Bridge, bicyclists must also use the narrow path to connect to the Portland Peninsula. Although this shared use path provides access to the Back Cove trail, it does not provide direct access to the campus. There are 8 public U-racks totaling 16 bicycle parking spaces located within the 970 Baxter Boulevard parking lot.

Walkscore.com rates East Deering with a Bikescore of 58/"Bikeable" indicating some bike infrastructure is present.

Bicycle Facility Opportunities

The Roux Institute at Northeastern University is dedicated to creating a safer, complete street along Sherwood Street to accommodate bicyclists into and out of the site. The campus will provide 166 bicycle parking spaces for students, staff, faculty and visitors. This quantity is more than triple the required amount of bicycle parking per the Portland Technical Manual. Shower and locker facilities will be provided for those commuters who bicycle to campus. The Roux Institute at Northeastern University will explore providing a Bike Fix-it Station for bike commuters and other visitors to the site.

Figure 13 Existing Bicycle Network



Public Transit

Existing Conditions

As shown in Figure 14, two bus lines currently stop near the campus: Metro Route 7 and Metro Routes 9A / 9B. Route 7 provides service between Portland and Falmouth with a stop at the Metro Pulse on the Peninsula as well as a stop near the campus at Veranda Street/Sherwood Street approximately a quarter of a mile from the center of the campus. Routes 9A/9B provide circular bus service between downtown Portland and North Deering with service running along Washington Avenue and Congress Street. Route 9A/9B stops on Washington Avenue near the site at Galvin Street and Veranda Street respectively which is under a half mile from the site. Bus transfers can be made at the Pulse and other stops on the Peninsula to reach the rest of Portland and several outlying towns.

Buses run continuously throughout the day, readily accommodating the varied schedules of students and other campus users. Metro BREEZ express bus service to Yarmouth, Freeport, and Brunswick and the Husky Line to Westbrook and Gorham establish a regional footprint for transit service. Ten local and express routes connect the campus to most of the Portland area with no more than one transfer.

In addition to the local Metro system, the Portland Transportation Center (PTC) in Thompson's Point provides regional bus and train service. Concord Coach Lines runs bus service from Portland to Boston, Massachusetts, Logan International Airport, and New York City as well as points north of Portland. The Amtrak Downeaster provides train service between Brunswick and Boston with a stop in Portland. Greyhound provides bus service between East Bayside in Portland and Boston, Massachusetts.

Future Metro Opportunities

Metro is contemplating improvements to the transit system throughout Portland. Service on Route 7 is expected to double in capacity with buses every 30 minutes. In addition, the Roux Institute at Northeastern University is working with Metro to consider site specific transit accommodation for an on-campus bus stop that would connect the Roux Institute at Northeastern University to other key locations across the city, including housing, additional transportation connections, and partner organizations. The Roux Institute at Northeastern is also working with Metro and MaineDOT to identify park and ride locations where Roux students, faculty and staff can park and use Metro to travel to the site.

Transit Together Plan

In January 2023, The Portland Area Comprehensive Transportation System (PACTS) Policy Board approved the Transit Together Plan. As of August 27, 2023, this plan enabled changes to Route 9 to provide more consistent 30-minute headways from 6am to 6pm on weekdays and from about 8am to 6pm on Saturdays. Route 9B will run one hour later in the evening.

In the Spring of 2024, Metro plans to make improvements to Route 7 by extending the route to the Portland Jetport via Congress Street with improved frequency and hours of operation. Frequency for Route 7 will improve from 60 to 30 minutes Monday through Saturday and services will be provided until 10pm or 11pm. The Falmouth loops will be eliminated, and Route 7 will use the Shaw's parking lot in Falmouth to turn around. In conjunction, Route 5 service to

the Jetport and Hutchins Drive will be discontinued to improve travel time between Portland and the Maine Mall. In addition, microtransit service will be implemented in east Falmouth. Microtransit riders within the zone will be able to request a ride using a smartphone app or phone call. These changes significantly increase the frequency and daily service to the campus.

Other Metro Opportunities

Metro is in the preliminary planning stages of studying how to extend Route 7 service along US Route 1 to Yarmouth. This extension could provide a bus route for campus commuters, with parking at the MaineDOT Exit 15 Park and Ride in Yarmouth.

The Roux Institute at Northeastern University is working with Metro to improve the quality and frequency of transit connections to the campus. Reduction of headways, modification of Route 5 or Route 7 to make a stop at the campus, and construction of a transit stop and turnaround on the campus, are all being pursued to further the convenience of transit for commuting to and from campus.

The university is currently running a trial program with METRO with a 100% subsidy of student, staff, and faculty fares. The University intends to subsidize transit usage long-term, with the subsidy level (or other incentives) dependent on utilization, timing, and user satisfaction.

Figure 14 Existing Public Transit Services



Vehicular Facilities

Major roads adjacent to the site are classified as a Townway (Sherwood Street) and Major Collector (Veranda Street, Bates Street, Baxter Boulevard, and Washington Avenue). The Roux Institute at Northeastern University is also proposed to be in close proximity to I-295 which is classified as an Interstate. Figure 15 below represents the existing roadway network.

Figure 15 Existing Roadway Network



10

Transportation Demand Management

As part of the City of Portland Development Review Process and pursuant to Section 17.3 of the City of Portland Technical Manual, the Roux Institute at Northeastern University has developed a robust Transportation Demand Management (TDM) Plan.

The TDM plan provides a cohesive approach to establish a targeted set of strategies aimed at reducing single occupancy vehicle trips to and from the proposed campus. The full TDM plan is provided in the Appendix and describes how the Roux Institute at Northeastern University will provide information and education, enhance alternative transportation infrastructure and mobility, and incentivize students, faculty, and staff so that they use more sustainable, multimodal commuting options such as walking, bicycling, transit, carpooling and telecommuting. The Roux Institute at Northeastern University is committed to ongoing annual surveying to monitor the implementation and success of the TDM plan per the City of Portland requirements.

This section provides an overview of the TDM plan the Roux Institute at Northeastern has submitted to the City and is committed to implement to achieve the assumed mode share targets.

TDM Coordinator

The Roux Institute at Northeastern University plans to follow industry best practice by appointing a campus-wide transportation coordinator. The TDM Coordinator will collect data on the TDM progress to ensure it evolves as the site develops. Once the site is operational, the TDM Coordinator will conduct a transportation survey for students, staff, and faculty to establish a baseline for future drive alone mode share reduction goals. They will also collect and disseminate information (including non-automobile travel options) on-site and organize outreach events and campaigns to encourage TDM participation. The TDM Coordinator will promote alternative transportation choices to educate those commuting to and from the campus and coordinate the implementation of TDM strategies to reduce single occupancy vehicle (SOV) trips. In addition, the TDM Coordinator will work with the City of Portland, Metro, GoMaine, car share, and bike share programs to improve non-SOV mode shares.

TDM Mode Split Targets

The TDM plan establishes short-term and long-term modal split targets. The TDM mode split target includes goals for reducing vehicle trips and increasing multimodal trips. Based on the future transportation system the campus will be supported by, and TDM measures that will be implemented, the short and long-term targets that are proposed as part of this TDM plan are presented in Table 11.

Table 11 Drive Mode Split Targets

Population	Mode Split Targets	
	Short-term	Long-term
Students	80%	65%
All Other Populations	90%	75%

TDM Strategies

Table 12 presents the TDM strategies categorized by investments, incentives and information/education and marketing.

Monitoring and Reporting Plan

The TDM Coordinator will be responsible for monitoring the efficacy of the TDM plan and making adjustments to the plan as needed to achieve modal split targets.

An annual survey will be administered to gather data for student, staff, and faculty commuting characteristics. Surveys provide a qualitative understanding of how well TDM program elements are working. This survey will ask respondents how they commuted to campus for the last five days and will provide a comprehensive list of mode share choices. Additional information including vehicle ownership, parking costs, and mode share barriers and incentives will also be collected. Parking utilization count data will be obtained annually to support the monitoring process. The TDM Coordinator will obtain data to quantify the hourly in, out, and number of parked vehicles in the garage. This data will help to establish the resulting parking demand for the enrollment at that time. The results of monitoring effort will be reported to the City of Portland on an annual basis by May 15th using the standard reporting tools provided by the city.

Table 12 TDM Strategies – Commitments			Timeline Years	
Category	**Strategy**	**Targeted User/Group**	**Short-term (0-2 Years)**	**Long-Term (2+ Years)**
Investments				
Public Transit Access	Work with Metro to provide a new transit stop on campus. The transit stop will include a shelter and provide real-time bus information as well as a turnaround area on site.	Students/Staff/Faculty/Visitors	Implement	
Public Transit Access	Subsidize the purchase of student and staff/faculty bus passes.	Students/Staff/Faculty	Implement	
Bicycle Access	Secured bicycle parking will be provided via 100 exterior and 66 interior spaces. This equates to over 3 times the City of Portland Land Use Code parking requirements totaling 166 bicycle spaces. This equates to over 3 times the required amount of bicycle parking.	Students/Staff/Faculty/Visitors	Implement	Continue to monitor and provide additional bicycle parking if demand increases.
Bicycle Access	Improve Sherwood Street by adding a shared use path.	Students/Staff/Faculty/Visitors	Implement Sherwood Street bicycle lanes.	
Bicycle Access	Provide on-site showers and lockers	Students/Staff/Faculty	Implement	
Pedestrian Access	Improve the pedestrian network by providing a new sidewalk and a shared use path along Sherwood Street and a new crosswalk across Sherwood Street at Veranda Street.	Students/Staff/Faculty/Visitors	Implement Sherwood Street improvements.	
Constrained Parking	Parking on-site will be constrained to a parking garage designed to accommodate 625 parking spaces in addition to 14 at-grade parking spaces.	Students/Staff/Faculty	Implement	Ongoing parking management as long-term phasing is completed.
Water Access/Marine Feature	Build a modern pier over the footprint of the current pier, in order to accommodate water shuttles and taxis.	Students/Staff/Faculty/Visitors		Implement
Incentives				
Flexible Work and/or On-line Learning	Provide a hybrid course format that allows online and on-site learning.	Students/Staff/Faculty	Implement	
Flexible Work and/or On-line Learning	Flexible scheduling (ability to start-stop some class hours outside of peak travel periods, e.g.)	Students/Staff/Faculty	Implement	
Parking Pricing	Parking charge for students, staff/faculty (unbundled parking costs - not included with tuition and not provided as a benefit to staff/faculty)	Students/Staff/Faculty	Implement	
Transit Incentives	Pre-tax transit pass purchasing for employees.	Staff/Faculty	Implement	
Preferential Parking	Prioritize parking for carpools.	Students/Staff/Faculty	Implement	
	Carpools will receive reduced price parking.	Students/Staff/Faculty	Implement	
Programmatic Incentives	Join the Emergency Ride Home program through the GOMAINE program.	Students/Staff/Faculty	Implement	
Electric Vehicle Parking	Monitor EV parking demand study and increase the chargers, their power, and number of EV-ready spaces as demand dictates.	Students/Staff/Faculty/Visitors		Monitor usage and provide additional EV charging infrastructure as needed.
Information/Education/Marketing				
Education on Travel Choices	Join GOMAINE. Encourage staff/faculty to join Go Maine & Record “green trips”.	Students/Staff/Faculty	Implement	
Education on Travel Choices	Provide a website that will present travel choices to campus available to students/staff/faculty with links to resources. Information on bicycling routes, bicycle parking infrastructure, and walking infrastructure will be provided on the website	Students/Staff/Faculty/visitors	Implement	
Education on Travel Choices	The TDM coordinator will send out organizational emails promoting alternative modes/TDM program to staff/faculty and students.	Students/Staff/Faculty	Implement	
Education on Travel Choices	The TDM coordinator will facilitate carpools by maintaining a database of interested parties; commuters will be matched with others who live near them or can access a park and ride location along their route. The Roux Institute at Northeastern University will also participate in the Maine DOT/Maine Turnpike Authority	Students/Staff/Faculty	Implement	

Table 12 TDM Strategies – Commitments			Timeline Years	
Category	**Strategy**	**Targeted User/Group**	**Short-term (0-2 Years)**	**Long-Term (2+ Years)**
	GOMAINE, which facilitates carpools across nearby sites and provides participants with rewards for carpooling			
Education on Travel Choices	The TDM coordinator will provide new students, staff, and faculty with orientation packets describing non drive-alone commutes and incentives.	Students/Staff/Faculty	Implement	
Education on Travel Choices	Provide transit maps and schedules on-campus.	Students/Staff/Faculty/Visitors	Implement	
Education on Travel Choices	Provide a real-time electronic screen displaying transit information – 'Next Bus' at bus stop.	Students/Staff/Faculty/Visitors	Implement	
Future Investments				
Bicycle Access	Consider installing a bike repair station	Students/Staff/Faculty/Visitors	Investigate	Implement
Bicycle Access	Consider providing electric bike charging	Students/Staff/Faculty/Visitors		Investigate through surveys to determine if this would be effective and used.
Portland BIKESHARE	Investigate establishing a new BIKESHARE station on campus. Currently, there are no BIKESHARE stations located in East Deering.	Students/Staff/Faculty/Visitors	Investigate	Implement as demand dictates
Car Share	Explore providing one car share vehicle on campus.	Students/Staff/Faculty		Provide car share parking as future program is developed.

11

Traffic Capacity Analysis

Intersections in the study area were evaluated for delay, level of service (LOS), and queue length using simulations developed with SimTraffic Version 11. Existing conditions were modeled based on actual roadway dimensions and lane configurations present in 2023. Traffic volumes were based on counts conducted in 2023, normalized for time of year, and projected to 2032. The existing conditions model used real-world signal timings and was reviewed against field-observed queuing to confirm it was consistent with actual operations.

Each simulation was conducted using industry standard parameters and software settings. All simulation results reported in this evaluation are the average of five runs for each scenario. Three scenarios were modeled:

- 2024 Existing Conditions – This scenario was completed using existing intersection geometry, signal timing, and phasing. Peak hour factors and heavy truck percentages were obtained from turning movement counts.
- 2032 No Build – This scenario used new traffic volumes but was otherwise identical to the 2024 Existing Conditions model.
- 2032 Build - This scenario added site-generated traffic to the 2032 No Build volumes, but maintained identical geometry, timing, and phasing.

The term "level of service" (LOS) is used to denote the different operating conditions that occur on a given roadway segment under various traffic volume loads. It is an indicator of trave speed, delay, and freedom to maneuver. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level of service ranges from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions.

LOS is reported differently for signalized and unsignalized intersections. For signalized intersections, the analysis considers the operation of all traffic entering the intersection and the LOS designation is for overall conditions at the intersection. For unsignalized intersections, the analysis assumes that traffic on the mainline is not affected by traffic on the side streets. Thus, the LOS designation is for the critical movement exiting the side street and is typically the left turn out of the side street or site driveway. Table 13 shows the LOS criteria for both signalized and unsignalized intersections.

Table 13 Level of Service and Delay Summary

Level of Service	Signalized Intersection Delay (sec)	Unsignalized Intersection Delay (sec)
A	<10.0	<10.0
B	10.1 – 20.0	10.1 – 15.0
C	20.1 – 35.0	15.1 – 25.0
D	35.1 – 55.0	25.1 – 35.0
E	55.1 – 80.0	35.1 – 50.0
F	>80.0	>50.0

Table 14 below summarizes the operation analysis results at each signalized intersection during the 2024 Existing, 2032 No Build and 2032 Build conditions. Movements with a LOS E or F are called out in red.

Table 14 Signalized Intersection Capacity Analysis

Intersection/Movement	2024 Existing			2032 No Build			2032 Build		
	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]
Veranda Street/I-295 Exit Ramp									
AM Peak Hour									
Veranda Street EBT	6.6	A	49	8.6	A	82	9.7	A	89
Veranda Street WBT	8	A	210	8.8	A	229	9.5	A	249
I-295 Ramp NBL	38.0	D	17	39.5	D	17	27.7	C	61
I-295 Ramp NBR	9.6	A	176	9.6	A	182	9.6	A	180
Overall	**8.6**	**A**	**--**	**9.2**	**A**	**--**	**10.0**	**B**	**--**
PM Peak Hour									
Veranda Street EBT	4.2	A	34	4.4	A	42	5.6	A	53
Veranda Street WBT	10.2	B	264	10.9	B	292	10.4	B	272
I-295 Ramp NBL	22.1	C	34	25.3	C	86	26.8	C	75
I-295 Ramp NBT	14.8	B	255	15.6	B	284	14.8	B	264
Overall	**11.9**	**B**	**--**	**12.7**	**B**	**--**	**12.5**	**B**	**--**
Washington Avenue/I-295 Ramps at Veranda Street/Bates Street									
AM Peak Hour									
Bates Street EBL	48.3	D	83	50.4	D	83	46.5	D	105
Bates Street EBT	18.1	B	140	17.5	B	147	42.8	D	208
Bates Street EBR	23.0	C		23.6	C		28.7	C	
Veranda Street WBL	52.8	D	184	53.9	D	208	75.3	E	311
Veranda Street WBT	42.8	D	133	44.9	D	142	56.0	E	155
Veranda Street WBR	20.0	B		22.2	C		31.7	C	
I-295 Ramps NBL	61.8	E	238	64.5	E	264	64.3	E	236
I-295 Ramps NBT	30.2	C	355	29.9	C	356	28.4	C	355
I-295 Ramps NBR	20.8	C	348	23.0	C	350	22.7	C	348
Washington Avenue SBL	29.9	C	72	33.1	C	89	31.3	C	115
Washington Avenue SBT	17.9	B	282	16.2	B	297	15.3	B	286
Washington Avenue SBR	18.0	B	306	15.5	B	323	13.0	B	308
Overall	**26.1**	**C**	**--**	**25.6**	**C**	**--**	**26.9**	**C**	**--**
PM Peak Hour									
Bates Street EBL	49.1	D	70	55.0	D	88	58.2	E	117
Bates Street EBT	20.1	C	124	18.6	B	127	49.0	D	213
Bates Street EBR	19.3	B		20.8	C		29.4	C	
Veranda Street WBL	49.8	D	159	51.3	D	164	95.8	F	477

Intersection/Movement	2024 Existing			2032 No Build			2032 Build		
	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]
Veranda Street WBT	45.9	D	133	43.8	D	136	88.8	F	144
Veranda Street WBR	29.9	C		26.9	C		69.0	E	
I-295 Ramps NBL	65.4	E	280	72.1	E	288	94.0	F	296
I-295 Ramps NBT	25.9	C	349	28.4	C	358	38.9	D	344
I-295 Ramps NBR	20.5	C	353	22.7	C	368	35.2	D	342
Washington Avenue SBL	37.2	D	117	40.1	D	114	41.4	D	140
Washington Avenue SBT	17.4	B	255	15.6	B	266	15.1	B	265
Washington Avenue SBR	15.5	B	278	13.0	B	293	13.5	B	283
Overall	**25.3**	**C**	**--**	**26.1**	**C**	**--**	**38.0**	**D**	**--**
Washington Avenue at Presumpscot Street									
AM Peak Hour									
Presumpscot Street EBL[#]	56.0	E	68	57.0	E	72	52.3	D	72
Presumpscot Street EBT[#]	59.5	E		53.1	D		82.4	F	
Presumpscot Street EBR[#]	30.0	C		13.1	B		19.3	B	
Presumpscot Street WBL	48.4	D	391	48.1	D	387	47.2	D	381
Presumpscot Street WBT[#]	51.3	D		48.3	D		51.0	D	
Presumpscot Street WBR	25.6	C	125	27.2	C	138	26.7	C	119
Washington Avenue NBL[#]	46.7	D	56	48.2	D	46	42.5	D	48
Washington Avenue NBT	32.3	C	646	35.0	C	691	31.0	C	618
Washington Avenue NBR	8.1	A	203	8.3	A	311	6.9	A	171
Washington Avenue SBL	46.5	D	128	55.8	E	128	64.0	E	125
Washington Avenue SBT	30.9	C	733	37.1	D	923	45.3	D	1127
Washington Avenue SBR[#]	33.1	C		29.3	C		46.2	D	
Overall	**32.0**	**C**	**--**	**35.3**	**D**	**--**	**37.2**	**D**	**--**
PM Peak Hour									
Presumpscot Street EBL[#]	64.4	E	57	57.6	E	59	56.8	E	64
Presumpscot Street EBT[#]	48.5	D		54.4	D		59.8	E	
Presumpscot Street EBR[#]	21.3	C		14.3	B		16.0	B	
Presumpscot Street WBL	48.3	D	330	47.4	D	338	46.4	D	329
Presumpscot Street WBT[#]	47.8	D		58.1	E		48.3	D	
Presumpscot Street WBR	29.8	C	152	31.8	C	139	32.5	C	144
Washington Avenue NBL[#]	43.7	D	48	69.2	E	61	61.5	E	56
Washington Avenue NBT	38.6	D	831	43.9	D	912	44.9	D	830
Washington Avenue NBR	9.8	A	417	10.2	B	577	9.4	A	400
Washington Avenue SBL	41.4	D	88	52.0	D	93	56.2	E	96
Washington Avenue SBT	22.3	C	542	22.2	C	563	28.5	C	729
Washington Avenue SBR[#]	19.0	B		6.3	A		36.3	D	

Intersection/Movement	2024 Existing			2032 No Build			2032 Build		
	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]
Overall	**30.0**	**C**	**--**	**32.4**	**C**	**--**	**34.7**	**C**	**--**
Veranda Street at I-295 SB Ramp/Wordsworth Street									
AM Peak Hour									
Veranda Street EBL#	39.1	D		43.7	D		55.3	E	
Veranda Street EBT	27.1	C	162	29.4	C	170	28.4	C	171
Veranda Street EBR	19.5	B		20.8	C		22.9	C	
Veranda Street WBL	11.0	B		13.2	B		13.8	B	
Veranda Street WBT	12.7	B	306	13.8	B	329	14.5	B	364
Veranda Street WBR#	0.0	A		3.3	A		18.1	B	
Wordsworth Street SBL#	0.0	A		0.0	A		26.5	C	
Wordsworth Street SBT#	45.6	D	20	58.6	E	29	49.2	D	25
Wordsworth Street SBR#	3.4	A		10.4	B		7.4	A	
Overall	**14.5**	**B**	**--**	**16.7**	**B**	**--**	**17.1**	**B**	**--**
PM Peak Hour									
Veranda Street EBL#	45.3	D		37.4	D		41.9	D	
Veranda Street EBT	24.4	C	154	24.9	C	143	23.8	C	200
Veranda Street EBR	23.6	C		25.6	C		26.4	C	
Veranda Street WBL	10.2	B		9.7	A		12.9	B	
Veranda Street WBT	9.6	A	313	9.9	A	345	12.8	B	403
Veranda Street WBR#	11.5	B		10.7	B		12.2	B	
Wordsworth Street SBL#	0.0	A		44.9	D		0.0	A	
Wordsworth Street SBT#	59.5	E	20	29.0	C	17	48.3	D	16
Wordsworth Street SBR#	9.9	A		6.1	A		10.1	B	
Overall	**13.8**	**B**	**--**	**13.3**	**B**	**--**	**16.3**	**B**	**--**

a Average total delay, in seconds per vehicle.

b Level-of-service.

c 95th percentile queue, in feet.

Movement has fewer than 20 vehicles per hour in Build Scenario and results are subject to substantial variation between model runs

Table 15 summarizes the operation analysis results at the unsignalized study area intersections during the 2024 Existing, 2032 No Build and 2032 Build conditions.

Table 15 Unsignalized Intersection Capacity Analysis

Intersection/Movement	2024 Existing			2032 No Build			2032 Build		
	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]
Sherwood Street/Veranda Street									
AM Peak Hour									
Veranda Street EBL	3.0	A		3.5	A		3.6	A	
Veranda Street EBT	1.0	A	19	1.4	A	34	2.3	A	31
Veranda Street EBR	0.8	A		0.9	A		1.4	A	
Veranda Street WBL				0.0			5.7	A	
Veranda Street WBT	1.8	A	--	2.0	A	1	4.1	A	47
Veranda Street WBR	1.2	A		1.2	A		2.6	A	
Sherwood Street NBL#	6.7	A		7.1	A		9.3	A	
Sherwood Street NBT#	9.7	A	26	7.6	A	28	12.1	B	51
Sherwood Street NBR#	3.4	A		4.1	A		2.9	A	
Sherwood Street SBL	7.6	A		7.3	A		11.0	B	
Sherwood Street SBT#			75	0.0		76	15.5	C	115
Sherwood Street SBR	5.2	A		5.1	A		9.2	A	
PM Peak Hour									
Veranda Street EBL	4.2	A		4.4	A		5.0	A	
Veranda Street EBT	1.3	A	50	1.5	A	62	3.3	A	76
Veranda Street EBR	0.9	A		1.7	A		2.1	A	
Veranda Street WBL	0.0	A		4.0	A		9.0	A	
Veranda Street WBT	1.4	A	--	1.4	A	3	7.3	A	116
Veranda Street WBR	1.0	A		1.3	A		5.7	A	
Sherwood Street NBL	6.8	A		0.0	A		61.3	F	
Sherwood Street NBT#	3.3	A	27	0.0	A	23	33.3	D	441
Sherwood Street NBR	7.7	A		3.7	A		56.6	F	
Sherwood Street SBL	4.3	A		8.4	A		19.1	C	
Sherwood Street SBT#	0.0	A	59	14.7	B	57	25.5	D	88
Sherwood Street SBR	4.6	A		4.5	A		17.8	C	
Washington Avenue at Kidder Street/E Kidder Street									
AM Peak Hour									

Intersection/Movement	2024 Existing			2032 No Build			2032 Build		
	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]
W Kidder Street EBR[#]	8.7	A	30	6.0	A	26	8.3	A	25
E Kidder Street WBL[#]	36.5	E		59.1	F		38.4	E	
E Kidder Street WBT[#]	13.4	B	30	27.8	D	29	42.3	E	35
E Kidder Street WBR[#]	13.6	B		7.9	A		11.9	B	
Washington Avenue NBL[#]	14.9	B		13.3	B		14.2	B	
Washington Avenue NBT	6.3	A	182	6.0	A	116	6.5	A	168
Washington Avenue NBR[#]	6.9	A		6.0	A		6.1	A	
Washington Avenue SBL[#]	9.1	A		10.8	B		15.7	C	
Washington Avenue SBT	2.5	A	80	2.3	A	29	5.2	A	257
Washington Avenue SBR[#]	2.0	A		2.9	A		2.0	A	
PM Peak Hour									
W Kidder Street EBT[#]	34.2	D	31	39.3	E	35	35.6	E	37
W Kidder Street EBR[#]	9.8	A		9.2	A		12.1	B	
E Kidder Street WBL[#]	0.0	A		0.0	A		0.0	A	
E Kidder Street WBT[#]	0.0	A	32	0.0	A	36	0.0	A	33
E Kidder Street WBR[#]	17.7	C		20.7	C		15.3	C	
Washington Avenue NBL	11.2	B		12.8	B		14.0	B	
Washington Avenue NBT	6.3	A	108	7.2	A	191	7.1	A	147
Washington Avenue NBR[#]	5.9	A		4.3	A		7.2	A	
Washington Avenue SBL[#]	11.6	B		11.0	B		18.8	C	
Washington Avenue SBT	2.0	A	34	2.0	A	22	2.3	A	49
Washington Avenue SBR[#]	2.8	A		1.8	A		2.3	A	
Baxter Boulevard/I-295 Ramps/Bates Street									
AM Peak Hour									
Baxter Boulevard EBL	3.0	A	53	3.4	A	59	3.3	A	61
Baxter Boulevard EBT	0.6	A		0.7	A	7	0.6	A	37
I-295 Ramp WBT	1.4	A	38	1.7	A	49	1.5	A	75
I-295 Ramp WBR	1.6	A		1.6	A		1.7	A	
Bates Street SBL	9.1	A		10.7	B		10.4	B	
Bates Street SBT	0.5	A	65	0.7	A	71	1.5	A	2
Bates Street SBR	0.1	A		0.1	A		0.1	A	
PM Peak Hour									
Baxter Boulevard EBL	4.2	A	54	4.0	A	48	4.2	A	53
Baxter Boulevard EBT	0.6	A	8	0.6	A	--	0.6	A	7
I-295 Ramp WBT	0.4	A	23	0.4	A	14	0.4	A	22
I-295 Ramp WBR	0.2	A		0.2	A		0.1	A	

Intersection/Movement	2024 Existing			2032 No Build			2032 Build		
	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]
Bates Street SBL	10.6	B		11.4	B		13.3	B	
Bates Street SBT	0.6	A	63	0.8	A	66	1.2	A	74
Bates Street SBR	0.0	A		0.0	A		0.0	A	

a Average total delay, in seconds per vehicle.

b Level-of-service.

c 95th percentile queue, in feet.

Movement has fewer than 20 vehicles per hour in Build Scenario and results are subject to substantial variation between model runs

As shown in Tables 14 and 15 above, the proposed development is not forecast to have a significant impact on roadway network, with the exception of the following intersections:

› Washington Avenue/I-295 Ramps at Veranda Street/Bates Street (Signalized)
  - Movements on the Veranda Street WB approach are forecast to fall to operate at a LOS E during the AM peak hour and LOS F during the PM peak hour. The I-295 NBL movement currently operates at LOS E but is forecast to operate at a LOS F during PM peak hour in the 2032 Build condition.
  - Bates Street EBL is forecast to fall to operate a LOS E during the PM peak hour. This LOS change is associated with only a three second increase in delay.

› Washington Avenue at Presumpscot Street (Signalized)
  - The Presumpscot EBT movement is forecast to fall from a LOS E to a LOS F with just under 60 seconds of delay during the AM peak hour.
  - Other left turns at this location will operate at LOS E either with or without the project in place.

› Sherwood Street/Veranda Street (Unsignalized)
  - The Sherwood Street NBL and NBR movements are forecast to fall to a LOS F

› Washington Avenue at Kidder Street/E Kidder Street (Unsignalized)
  - The WB and EB approach of Kidder Street are forecast to operate at a LOS E either with or without the project in place

Operation Mitigation

The City of Portland has requested an analysis of a potential mitigation measure. With the improvements to I-295 Exit 9 to allow for full access to and from I-295 south, an opportunity presents itself to eliminate the Veranda Street left turns onto I-295 by relocating those trips (site and non-site related) to Exit 9. Although accommodations would need to be made for METRO routes that use that left turn, the elimination of most vehicles from that movement could improve operations. This modification was contemplated in the analysis below.

To improve the operation of the intersections identified above, the following measures were incorporated to create two 2032 Build with Mitigation scenarios:

Mitigation 1

- Improve signal timings at all signalized study area intersections through better coordination and optimization
- Reconfigure westbound Sherwood Street with separate left and right turn lanes

Mitigation 2

- Mitigation 1 items, and
- Eliminate left turns off Veranda Street to I-295 at Washington Avenue and re-route vehicles to use the Exit 9 on-ramp (Mitigation 2)

The following table summarizes the level of service by movement comparing the 2032 Build Scenario with the mitigation outlined above.

Table 16 Signalized Intersection Capacity Analysis

Intersection/Movement	2032 Build			Mitigation 1			Mitigation 2		
	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]
Veranda Street/I-295 Exit Ramp									
AM Peak Hour									
Veranda Street EBT	9.7	A	89	8.4	A	60	9.6	A	73
Veranda Street WBT	9.5	A	249	9.5	A	248	9.1	A	241
I-295 Ramp NBL	27.7	C	61	26.4	C	61	23.6	C	51
I-295 Ramp NBR	9.6	A	180	9.7	A	171	9.9	A	188
Overall	**10.0**	**B**	**--**	**10.0**	**B**	**--**	**9.8**	**A**	**--**
PM Peak Hour									
Veranda Street EBT	5.6	A	53	18.4	B	138	17.2	B	140
Veranda Street WBT	10.4	B	272	16.8	B	352	16.6	B	359
I-295 Ramp NBL	26.8	C	75	21.3	C	84	20.2	C	59
I-295 Ramp NBT	14.8	B	264	12.0	B	238	11.3	B	217
Overall	**12.5**	**B**	**--**	**15.1**	**B**	**--**	**14.5**	**B**	**--**
Washington Avenue/I-295 Ramps at Veranda Street/Bates Street									
AM Peak Hour									
Bates Street EBL	46.5	D	105	43.1	D	93	50.6	D	125
Bates Street EBT	42.8	D	208	38.2	D	181	44.2	D	202
Bates Street EBR	28.7	C		24.2	C		30.4	C	
Veranda Street WBL	75.3	E	311	51.4	D	219	n/a	n/a	n/a
Veranda Street WBT	56.0	E	155	44.2	D	153	43.3	D	92
Veranda Street WBR	31.7	C		21.4	C		8.1	A	57
I-295 Ramps NBL	64.3	E	236	56.4	E	240	50.7	D	217
I-295 Ramps NBT	28.4	C	355	28.1	C	359	27.5	C	359
I-295 Ramps NBR	22.7	C	348	23.4	C	360	22.0	C	355
Washington Avenue SBL	31.3	C	115	31.3	C	133	37.3	D	137
Washington Avenue SBT	15.3	B	286	21.8	C	333	23.7	C	353
Washington Avenue SBR	13.0	B	308	20.5	C	362	22.9	C	369
Overall	**26.9**	**C**	**--**	**27.7**	**C**	**--**	**27.2**	**C**	**--**
PM Peak Hour									
Bates Street EBL	58.2	E	117	43.0	D	96	54.3	D	110
Bates Street EBT	49.0	D	213	40.2	D	192	45.7	D	203
Bates Street EBR	29.4	C		24.9	C		25.6	C	
Veranda Street WBL	95.8	F	477	54.5	D	331	n/a	n/a	n/a
Veranda Street WBT	69.0	E	133	37.6	D	136	17.5	B	133

Intersection/Movement	2032 Build			Mitigation 1			Mitigation 2		
	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]
Veranda Street WBR	94.0	F	296	62.8	E	281	54.7	D	304
I-295 Ramps NBL	38.9	D	344	27.6	C	368	26.5	C	377
I-295 Ramps NBT	35.2	D	342	23.2	C	370	22.0	C	372
I-295 Ramps NBR	41.4	D	140	73.4	E	148	51.4	D	147
Washington Avenue SBL	15.1	B	265	35.7	D	423	30.5	C	396
Washington Avenue SBT	13.5	B	283	34.4	C	432	28.6	C	431
Washington Avenue SBR	**38.0**	**D**	--	**35.0**	**D**	--	30.4	**C**	--
Overall	58.2	E	117	43.0	D	96	54.3	D	110
Washington Avenue at Presumpscot Street									
AM Peak Hour									
Presumpscot Street EBL	52.3	D	72	58.6	E	63	57.0	E	71
Presumpscot Street EBT	82.4	F		57.0	E		58.8	E	
Presumpscot Street EBR	19.3	B		12.1	B		20.9	C	
Presumpscot Street WBL	47.2	D	381	48.6	D	399	45.9	D	369
Presumpscot Street WBT	51.0	D		41.8	D		34.3	C	
Presumpscot Street WBR	26.7	C	119	28.6	C	126	22.2	C	108
Washington Avenue NBL	42.5	D	48	37.6	D	38	40.4	D	62
Washington Avenue NBT	31.0	C	618	27.3	C	571	22.7	C	624
Washington Avenue NBR	6.9	A	171	6.5	A	133	6.7	A	180
Washington Avenue SBL	64.0	E	125	61.6	E	134	50.5	D	126
Washington Avenue SBT	45.3	D	1127	40.7	D	969	35.9	D	875
Washington Avenue SBR	46.2	D		36.4	D		42.3	D	
Overall	**37.2**	**D**	--	**34.5**	**C**	--	**30.4**	**C**	--
PM Peak Hour									
Presumpscot Street EBL	56.8	E	64	57.2	E	71	50.5	D	64
Presumpscot Street EBT	59.8	E		54.1	D		55.6	E	
Presumpscot Street EBR	16.0	B		19.3	B		13.2	B	
Presumpscot Street WBL	46.4	D	329	45.5	D	317	45.6	D	309
Presumpscot Street WBT	48.3	D		50.1	D		52.8	D	
Presumpscot Street WBR	32.5	C	144	29.5	C	141	28.4	C	122
Washington Avenue NBL	61.5	E	56	42.2	D	63	68.1	E	64
Washington Avenue NBT	44.9	D	830	37.8	D	1025	48.3	D	1122
Washington Avenue NBR	9.4	A	400	8.1	A	621	11.4	B	884
Washington Avenue SBL	56.2	E	96	52.5	D	95	54.6	D	119
Washington Avenue SBT	28.5	C	729	22.9	C	577	24.5	C	631
Washington Avenue SBR	36.3	D		24.2	C		27.0	C	
Overall	**34.7**	**C**	--	**29.7**	**C**	--	**34.6**	**C**	--

Intersection/Movement	2032 Build			Mitigation 1			Mitigation 2		
	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]
Veranda Street at I-295 SB Ramp/Wordsworth Street									
AM Peak Hour									
Veranda Street EBL	55.3	E		32.0	C		30.3	C	
Veranda Street EBT	28.4	C	171	28.9	C	172	25.7	C	224
Veranda Street EBR	22.9	C		25.5	C		23.7	C	
Veranda Street WBL	13.8	B		12.8	B		16.3	B	
Veranda Street WBT	14.5	B	364	14.2	B	343	17.0	B	378
Veranda Street WBR	18.1	B		5.5	A		19.7	B	
Wordsworth Street SBL	26.5	C		27.6	C		0.0	A	
Wordsworth Street SBT	49.2	D	25	42.5	D	26	54.8	D	25
Wordsworth Street SBR	7.4	A		4.8	A		3.7	A	
Overall	**17.1**	**B**	**--**	**16.5**	**B**	**--**	**19.0**	**B**	**--**
PM Peak Hour									
Veranda Street EBL	41.9	D		33.1	C		33.7	C	
Veranda Street EBT	23.8	C	200	23.2	C	187	21.3	C	234
Veranda Street EBR	26.4	C		25.2	C		25.4	C	
Veranda Street WBL	12.9	B		6.9	A		8.2	A	
Veranda Street WBT	12.8	B	403	6.9	A	196	8.4	A	221
Veranda Street WBR	12.2	B		5.2	A		3.1	A	
Wordsworth Street SBL	0.0	A		37.0	D		25.2	C	
Wordsworth Street SBT	48.3	D	16	58.0	E	16	59.2	E	23
Wordsworth Street SBR	10.1	B		6.7	A		11.5	B	
Overall	**16.3**	**B**	**--**	**11.8**	**B**	**--**	**13.0**	**B**	**--**

a Average total delay, in seconds per vehicle.

b Level-of-service.

c 95th percentile queue, in feet.

95th percentile volume exceeds capacity, queue may be longer.

m Volume for 95th percentile queue is metered by upstream signal.

Table 17 compares the operations analysis results at the unsignalized study area intersections in the 2032 Build, Mitigation 1, and Mitigation 2 scenarios.

Table 17 Unsignalized Intersection Capacity Analysis

Intersection/Movement	2032 Build			Mitigation 1			Mitigation 2		
	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]	Delay[a]	LOS[b]	95 Q[c]
Sherwood Street/Veranda Street									
AM Peak Hour									
Veranda Street EBL	3.6	A		3.6	A		3.2	A	
Veranda Street EBT	2.3	A	31	2.4	A	42	2.2	A	26
Veranda Street EBR	1.4	A		1.8	A		1.6	A	
Veranda Street WBL	5.7	A		6.6	A		5.8	A	
Veranda Street WBT	4.1	A	47	3.0	A	42	2.0	A	32
Veranda Street WBR	2.6	A		2.0	A		2.3	A	
Sherwood Street NBL	9.3	A		9.2	A	48	7.3	A	36
Sherwood Street NBT	12.1	B	51	n/a	n/a	n/a	n/a	n/a	n/a
Sherwood Street NBR	2.9	A		3.5	A	22	3.3	A	29
Sherwood Street SBL	11.0	B		8.9	A		8.6	A	
Sherwood Street SBT	15.5	C	115	12.1	B	57	10.8	B	97
Sherwood Street SBR	9.2	A		6.2	A		5.5	A	
PM Peak Hour									
Veranda Street EBL	5.0	A		5.2	A		4.5	A	
Veranda Street EBT	3.3	A	76	3.4	A	76	3.2	A	66
Veranda Street EBR	2.1	A		2.3	A		2.1	A	
Veranda Street WBL	9.0	A		7.7	A		7.1	A	
Veranda Street WBT	7.3	A	116	3.5	A	73	3.0	A	55
Veranda Street WBR	5.7	A		2.4	A		1.6	A	
Sherwood Street NBL	61.3	F		19.7	C	110	13.0	B	73
Sherwood Street NBT	33.3	D	441	n/a	n/a	n/a	n/a	n/a	n/a
Sherwood Street NBR	56.6	F		5.7	A	59	6.0	A	70
Sherwood Street SBL	19.1	C		15.2	C		11.8	B	
Sherwood Street SBT	25.5	D	88	19.6	C	72	17.6	C	69
Sherwood Street SBR	17.8	C		8.2	A		6.3	A	

a Average total delay, in seconds per vehicle.

b Level-of-service.

c 95th percentile queue, in feet.

95th percentile volume exceeds capacity, queue may be longer.

With the listed mitigation in place, levels of service for most movements are forecast to return to that of the 2024 Existing Conditions or better. The main queuing concern, along the Exit 8 northbound off ramp, was evaluated with the finding that these mitigation measures will prevent queues from reaching the mainline of I-295 during any peak hour.

The queue analysis indicates that the 95th percentile queues are not forecast to significantly increase from existing conditions and locations where the storage lengths are exceeded are generally exceeded during both No-Build and Build conditions. Improvements on Sherwood Street are forecast to accommodate all site generated traffic.

12

Transit Analysis

A transit analysis has been conducted to assess the impacts of the project generated transit trips on the Metro Bus Route 7. Existing transit utilization and capacity in the study area has been analyzed for Bus Route 7 as it is anticipated that the vast majority of transit riders will use the new bus stop on campus, and this is therefore a conservative approach. There is potential for Bus Route 5 to be extended to the campus in the future however, analyzing Route 7 is a more realistic approach at this time.

The analysis follows six steps in evaluating the utilization and availability of capacity on Bus Route 7:

- Step 1: Quantify the bus capacity
- Step 2: Quantify the existing ridership
- Step 3: Report on existing utilization
- Step 4: Develop and assign Project-generated transit trips to the bus route
- Step 5: Estimate future capacity and ridership based on changes to the bus route
- Step 6: Report on future Project impacts to system utilization

The V/C ratio (Volume to Capacity ratio) is the resulting metric that is used to reflect the level of utilization. The V/C ratios (or utilization rates) are presented for both the 2024 Existing Condition under Step 3, and 2032 Build Condition under Step 6.

Step 1: Existing Bus Route 7 Capacity

The capacity of the bus line depends on the number of buses operating during a specified time period (frequency) and the number of people that can be accommodated on a bus.

The study period for this analysis includes the morning and evening transit peak hours. Bus frequencies and vehicle load standards (i.e. number of people safely and comfortably riding on a bus) were obtained from Metro. The Metro bus policy capacity of 52 passengers per bus was assumed. There are 35 seats per bus and a bus is considered "full" at 150% of the seated capacity. There is one bus per peak hour on this route.

Step 2: Existing Bus Route 7 Ridership

Metro ridership data was obtained for the third week of October to estimate peak hour passenger loads as shown in Table 18. Metro indicated that October 2023 was a standard near-peak month for Metro. Data for October 17, 2023 was selected to represent the near-peak ridership data for this analysis. The passenger load data below represents the highest loads on the line of each direction during the peak hours which happens to occur at or before the Veranda Street/Sherwood Street stop.

Table 18 Metro Ridership

	AM Peak Hour				PM Peak Hour			
	Pax Load Entering Stop	# Pax Boarding	# Pax Alighting	Pax Load Exiting Stop	Pax Load Entering Stop	# Pax Boarding	# Pax Alighting	Pax Load Exiting Stop
Route 7 Inbound	-	-	-	-	13	2	0	15
Route 7 Outbound	9	0	0	9	7	0	3	4

Source: Metro

Step 3: Existing Bus Route 7 Utilization

By dividing the ridership in Step 2 by the capacity in Step 1, utilization rates were obtained. Table 19 presents existing utilization levels in terms of V/C (Volume to capacity) ratios.

Table 19 Existing Peak Bus Utilization

	AM Peak Hour			PM Peak Hour		
	Capacity	AM Peak Hour Ridership	AM Peak Hour V/C	Capacity	PM Peak Hour Ridership	PM Peak Hour V/C
Route 7 Inbound	-	-	-	52	15	0.29
Route 7 Outbound	52	9	0.17	52	7	0.13

Source: Metro

As presented in Table 19, the existing Bus Route 7 is operating within capacity with V/C ratios well below 1.0. A V/C ratio of under 1.0 indicates that all passengers experience a safe and comfortable ride.

Step 4: Development of Project Generated Transit Trips

As discussed previously, the transit mode share for the Project is 10% for students and 5% for all other users. The Project is expected to generate 20 new transit trips (20 entering, 0 exiting) during the AM peak hour and 51 new transit trips (30 entering, 21 exiting) during the PM peak hour as shown previously in Table 8. Although it is likely that a small portion of the project transit riders may travel between Falmouth and Portland, Bus Route 7 typically experiences the highest passenger load in downtown Portland. Therefore, all of the project transit trips are assumed to arrive and depart to and from downtown Portland to present a conservative analysis.

Table 20 Peak Hour Project Generated Transit Trips

	AM Peak Hour			PM Peak Hour		
	Trips Out (boardings)	Trips In (alightings)	Trips Total	Trips Out (boardings)	Trips In (alightings)	Trips Total
Route 7 Inbound	0	0	0	21	0	21
Route 7 Outbound	0	20	20	0	30	30

Notes: Assumes 100% of Project transit trips are to/from downtown Portland

Step 5: Future Metro Changes to Bus Route 7

Metro is planning to increase capacity by doubling frequency and extending the route from downtown Portland to the Portland International Jetport. As a result of the improved service, ridership is also expected to increase. Metro provided an estimate of a 210% increase based on the enhanced service. The increase in capacity and existing ridership data has been accounted for in the following Step 6 in order to estimate the future 2032 Build utilization.

Step 6: 2032 Build Condition Bus Route 7 Utilization

The estimated site related transit trips per peak hour were added to the future ridership volumes to develop the "2032 Build Condition" utilization scenario. Resulting V/C ratios are presented in Table 21.

Table 21 2032 Build Condition Bus Route 7 Peak Hour Utilization

	AM Peak Hour			PM Peak Hour		
	Capacity	Ridership	V/C	Capacity	Ridership	V/C
Route 7 Inbound	-	-	-	104	53	0.50
Route 7 Outbound	104	39	0.37	104	45	0.43

Notes: Assumes 210% increase in existing ridership and increased frequency resulting in two buses per hour

As presented in Table 21, Bus Route 7 is expected to experience a small increase in the V/C ratio as a result of the Bus Route 7 enhancements as well as the project. The V/C ratios are projected to still be well below 1.0.

Additional Bus Route 7 Information from Metro:

Metro provided the following information regarding Bus Route 7: *There is a possibility that Metro will expand Bus Route 7 service into Yarmouth in 2025 or 2026 which may also increase passenger loads along Veranda Street.* Since this is not a definitive project and there is no estimate on ridership, this has not been accounted for in the analysis. Due to the available capacity assuming the project is built 2032, it is anticipated that demand would be met. *Heavy loading issues are more likely to occur along the downtown Congress Street corridor. If buses are ever near capacity, Metro typically has the means to run a relief bus to capture overflow, by ensuring that they are running the larger buses.*

13

Pedestrian and Bicycle Analysis

Pedestrian Level of Service

Pedestrian level-of-service (PLOS) at signalized intersections was analyzed using the methodology outlined in the 2000 HCM. The PLOS criteria are presented in Table 22.

Table 22 Pedestrian Level of Service Criteria

Level of Service	Pedestrian Delay Signalized (sec/p)
PLOS A	<10
PLOS B	≥10-20
PLOS C	>20 – 30
PLOS D	>30 – 40
PLOS E	>40 – 60
PLOS F	>60

Source: 2000 HCM

PLOS at signalized intersections is dictated by the portion of the signal cycle dedicated to the pedestrian crossing. Accordingly, increasing pedestrian volumes does not alter PLOS at signalized intersections, and if walk times and cycle lengths do not change PLOS will remain the same under any condition. Table 23 presents the PLOS at each signalized crosswalk for AM and PM peak hours.

Table 23 Signalized PLOS Summary

Intersection	Crosswalk	AM Peak Hour PLOS	PM Peak Hour PLOS
Veranda Street/I-295 Exit Ramp	South	D	D
Washington Avenue/I-295 Ramps at Veranda Street/Bates Street	East	E	E
	West	E	E
	North	E	E
Washington Avenue at Presumpscot Street	East	E	E
	West	E	E
	North	E	E
	South	E	E
Veranda Street at I-295 SB Ramp/Wordsworth Street	East	D	D
	North	D	D
	South	D	D

None of the intersections are expected to experience a change in PLOS due to the project.

The sidewalks along Veranda Street at the intersection of Sherwood Street are approximately 5-6 feet in width. Turning movement counts at this intersection indicate that peak hour pedestrian volumes crossing at this intersection are under 10 pedestrians per peak hour. The addition of the project generated walk trips would result in at most 26 additional pedestrians at this intersection during the evening peak hour. The space allocated to the sidewalks, corners and crosswalks would accommodate future pedestrian volumes with the Project in place. The project generated pedestrian trips are expected to further disperse throughout the neighborhood and become less concentrated at the other study area intersections. The proposed crosswalk across Sherwood Street is expected to improve pedestrian safety and connectivity at this intersection. New sidewalks along Sherwood Street will improve pedestrian conditions and walkability to the project site.

Bicycle Capacity

As shown in Attachment 7C, the project generated bicycle trips will only result in 10 inbound trips during the morning peak hour and 15 inbound/11 outbound trips during the evening peak hour. Once distributed throughout the bicycle network surrounding the project, this is a small number on each route. All of the project generated bicycle trips will be well served by the shared use path proposed on Sherwood Street which will collect riders from the neighborhood as well as the muti-use paths near the site. Bicycle counts at the intersection of Washington Avenue at Presumpscot Street indicate bicycle volumes along Washington Avenue were 4 or less bicycle riders during the peak hours. Veranda Street at Sherwood Street had 15 or less bicycle riders at any movement at the intersection during the peak hours. Adding the additional project generated bicycle volumes will not adversely impact capacity of bicycle operations in the study area.

14

Crash History

As previously presented in the *TMP Application Section 1-6*, a review of high crash locations (HCL) in the vicinity of the proposed campus was completed for the most recent 3-year period of crash data available (2020-2022).

To evaluate whether a location is problematic, MaineDOT uses two criteria to define a High Crash Location (HCL). Both of the following criteria must be met in order to be classified as an HCL.

1. A critical rate factor (CRF) of 1.00 or more for a three-year period. A CRF compares the actual crash rate to the rate for similar intersections in the state. A CRF of less than 1.00 indicated a rate of less than average and:
2. A minimum of eight crashes over the same three-year period

As shown in Table 24, there are four HCLs in the site vicinity. The crash information for the intersections in the site vicinity is provided in Attachment 7E.

Table 24 High Crash Locations

Location	Total (CRF)	Crash Severity		
		Fatal	Injury	PDO
Ocean Avenue from Catafalque Drive to Washington Avenue	9 (1.90)	0	1	7
Washington Avenue from Galvin Street to Bates Street	8 (1.15)	0	3	5
Washington Avenue from Presumpscot Street to Cummings Street	9 (1.15)	0	2	6
Washington Avenue from Ocean Avenue to Byfield Road	12 (1.59)	0	3	9

It is important to note that the intersection of Veranda Street at I-295 SB Ramp/Wordsworth Street (Node 60334) is also identified as an HCL during the 2020-2022 period with a total of 10 crashes and a CRF of 4.75. This intersection was part of The Veranda Plan and has been recently reconstructed. MaineDOT has informed VHB that an HCL diagram will not be provided for this intersection until all crashes are current for 2023-2025.

Locations that experienced 8 or more crashes but have a CRF lower than 1.00 are not considered high crash locations but are highlighted below:

Intersections:

› Bates Street / Veranda Street / Washington Avenue (17 Crashes / CRF = 0.52)

› Ocean Avenue / Washington Avenue (21 Crashes / CRF = 0.82)

› Presumpscot Street / Washington Avenue (16 Crashes / CRF = 0.57)

Although these locations are not considered high crash locations, they are all located in the projected study area and are further investigated below.

Additional investigation of the I-295 Exit 8 off-ramp was raised at the scoping meeting. Historically this section has been an HCL (most recently 2017-2019 and 2019-2021 study periods). This section has experienced 6 crashes and a CRF of 1.03 for the 2020-2022 period and is not considered an HCL. Additionally, this section was also investigated for the 2021-2023 period and experienced 4 crashes, therefore additional study of the Exit 8 off-ramp is not warranted.

Roadway Sections

Node 13514-17045: Ocean Avenue from Catafalque Drive to Washington Avenue (Total of 9 Crashes, CRF=1.90)

› This section of Ocean Avenue provides one lane in each direction and expands to include a left-turn storage lane in the eastbound direction approaching Washington Avenue. A pattern of crashes occurred at the commercial driveway adjacent to the intersection on the south side of the roadway where four crashes were caused by failure to yield. Three crashes occurred at the driveway adjacent to the intersection on the north side of the roadway. The close proximity of these commercial driveways to the intersection and the permission of left turns could be a factor for these crashes. No countermeasures are recommended since these are existing commercial driveways, but access management should be considered as a part of future roadway improvements.

Node 17036-18737: Washington Avenue from Galvin Street to Bates Street (Total of 8 Crashes, CRF=1.15)

› Washington Avenue contains two general purpose travel lanes in each direction between Galvin Street and Bates Street and expands to provide an exclusive left-turn lane in the Washington Avenue southbound direction. A small cluster of three crashes occurred at the driveway on the east side of Washington Avenue closest to Veranda Street where vehicles turning left into the driveway failed to yield to oncoming traffic. No countermeasures are recommended since this is a private driveway.

Node 17038-17039: Washington Avenue from Presumpscot Street to Cummings Street (Total of 9 Crashes, CRF=1.15)

› Washington Avenue between Presumpscot Street to Cummings Street provides one general purpose travel lane in each direction with an exclusive left-turn lane in the southbound direction at Presumpscot Street. No consistent crash patterns were identified as the crashes

were spread out throughout the corridor and were caused by various actions therefore no countermeasures are recommended.

Node 17045-17046: Washington Avenue from Ocean Avenue to Byfield Road (Total of 12 Crashes, CRF=1.59)

- The section of Washington Avenue between Ocean Avenue and Byfield Road provides one general purpose travel lane in the northbound direction and one general purpose travel lane and an exclusive left-turn lane in the southbound direction. A cluster of crashes occurred along the northbound direction adjacent to the commercial driveways adjacent to Ocean Avenue. Six crashes took place due to turning vehicles entering or exiting the driveway and not yielding properly to oncoming traffic. The close proximity of these commercial driveways to the intersection and the permission of left turns could be a factor for these crashes. No countermeasures are recommended since these are existing commercial driveways, however access management should be considered as a part of future roadway work.

Intersections (Not HCLs)

Node 18737: Bates Street / Veranda Street / Washington Avenue (Total of 17 Crashes, CRF=0.52)

- There are two rear end crash patterns at this intersection, one on the Washington Avenue approach and one on the I-295 ramps approach. Both patterns experience 3 crashes caused by late lane changes with failure to stay in lane. A countermeasure would be to place advance lane use signage on the ramp The potential restriping of Washington Avenue would address this issue.

Node 17045: Ocean Avenue / Washington Avenue (Total of 21 Crashes, CRF=0.82)

- There is a crash pattern on Washington Avenue eastbound with 9 rear end crashes. The majority of crashes occurred in the afternoon and were caused by vehicles following too close. A countermeasure would be field adjusting clearance times to allow vehicles to clear the intersection.
- There is another crash pattern of left turn vehicles turning off Washington Avenue onto Ocean Avenue with four t-bone crashes. Currently the left turn movement is protected/permissive with a four section signal head. A countermeasure would be to replace the signal head with a left turn flashing yellow arrow signal head to further communicate to left turning vehicles to yield to oncoming traffic when in the permissive phase.

Node 17038: Presumpscot Street / Washington Avenue (Total of 16 Crashes, CRF=0.57)

- There is a crash pattern on each approach of Washington Avenue. The westbound approach experienced a crash pattern of five rear end crashes and the eastbound approach experienced a crash pattern of three rear end crashes. The majority of the rear end crashes were caused by vehicles following too close. A countermeasure would be field adjusting clearance times to allow vehicles to clear the intersection.

15

Sight Distance

As outlined in Section 2, the site will be accessed directly off Sherwood Street into the proposed campus. All driveway locations are illustrated on the site plans in Attachment 7A.

Since access to the site is an extension of Sherwood Street, sight lines were measured at the intersection of Sherwood Street / Veranda Street.

VHB followed the MaineDOT evaluation of sight distance. Sight distance is measured to and from the point of centerline of the proposed access that is located 10 feet from the edge of the traveled way. The speed limit is posted as 30 mph on Veranda Street. The minimum allowable sight distances can be seen in Table 25 below:

Table 25 MaineDOT Sight Distance Requirements

Posted Speed (MPH)	Sight Distance (Feet)
20	155
25	200
30	**250**
35	305
40	360
45	425
50	495
55	570
60	645

Based on a field visit, the sight distance exceeds the minimum 250 feet on Veranda Street looking right. However, when exiting Sherwood Street, the sight distance looking left is blocked by the on-street parking and is only visible to 230 feet. As in most urban areas, in actuality, vehicles pull up further than 10 feet behind the edge of pavement. If existing vehicles pull up to edge of roadway, beyond the impact of the parked vehicles on the south side of Veranda Street, sight lines increase dramatically.

16

MUTCD Signal Warrant Analysis: Bates Street at Baxter Boulevard

A traffic signal warrant analysis is completed based on the nine warrants outlined in the Manual on Uniform Traffic Control Devices (MUTCD), 11th Edition, Chapter 4C. The nine warrants are as follows:

- Warrant 1 – Eight Hour Vehicular Volume
- Warrant 2 – Four Hour Vehicular Volume
- Warrant 3 – Peak Hour
- Warrant 4 – Pedestrian Volumes
- Warrant 5 – School Crossing
- Warrant 6 – Coordinated Signal System
- Warrant 7 – Crash Experience
- Warrant 8 – Roadway Network
- Warrant 9 – Intersection Near a Grade Crossing

Warrants 1, 2, and 3 are based on the number of vehicles moving through the intersection and are most commonly used. Warrants 4-9 are based on other characteristics of the intersection and surrounding roadway network. The MUTCD states that a traffic control signal should not be installed unless one or more of the warrants is met. These warrants were evaluated for the intersection of Bates Street and Baxter Boulevard as described below and detailed in Attachment 7F.

Traffic Volumes

Warrants 1-3 are based on the hourly volume of traffic moving through the intersection on an average day. These warrants were evaluated based on projected volumes for 2032, including new traffic generated by this development. The basis for these projections are turning movement counts completed at the intersection of Bates Street with Baxter Boulevard on Thursday, November 2, 2023 from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. The following summarizes the adjustments made to the turning movement counts to predict volumes on an average day in 2032. In addition to these adjustments, new trips were added for this development as discussed elsewhere in this study.

Seasonal Adjustment

MaineDOT weekly group mean factors were used to adjust the traffic volumes to those anticipated to be experienced on an average day. For turning movement counts collected during the week of October 30, an adjustment of 1.08 was applied to the raw volumes.

Annual Growth

In addition to a seasonal adjustment, an annual growth rate was applied to estimate the traffic volumes that will be experienced during the analysis year. The signal warrant analysis is being completed for 2032 and an annual growth rate of 0.5% per year has been applied to the seasonally adjusted volumes, as directed by MaineDOT staff.

24-Hour Projection

Based on a short-term count conducted by Maine DOT along Bates Street west of the intersection, hour-by-hour traffic volumes as a percentage of the peak hour were calculated. These were scaled by the 2032 Build Projections to determine the highest, 4th highest, and 8th highest hourly volumes needed to evaluate the signal warrants.

Warrant 1 – Eight Hour Vehicular Volume

This warrant is intended to be used when traffic volumes on both the major and minor streets meet or exceed the threshold volumes during eight hours of the average day. The MUTCD allows that if the posted or 85th percentile speed on the major road exceeds 40 mph or if the intersection is in a community with a population of less than 10,000, the hourly traffic volumes required to meet the warrant are reduced to 70% of the original threshold volumes. Based on 2022 US Census estimates, the City of Portland has a population of 68,424, which does not allow the 70% threshold volumes to be used.

For the number of lanes present at this intersection, the warrant requires that a minimum hourly volume of 600 vehicles on the major street (sum of both approaches) and 150 vehicles on the minor approach be sustained for any eight hours of the typical day. This is only satisfied for two hours of the day. We can therefore conclude that **Warrant 1 will not be met in 2032.**

Warrant 2 – Four Hour Vehicular Volume

This warrant is met when traffic volumes on both the major and minor streets meet or exceed the threshold volumes during four hours of the average day. Like Warrant 1, the MUTCD allows that if the posted or 85th percentile speed on the major road exceeds 40 mph or if the intersection is in a community with a population of less than 10,000, the hourly traffic volumes required to meet the warrant can be reduced to 70% of the original threshold volumes, which has not been used. As shown in the Appendix, the minimums are not met even during the busiest hour of the day. As a result, we can conclude that **Warrant 2 is not met in 2032.**

Warrant 3 – Peak Hour Vehicular Volume

This warrant is met by either exceeding a minimum volume threshold or minimum combined volume and delay threshold. This warrant is limited to locations influenced by generators that surge large numbers of vehicles during a short period of time such as office complexes or industrial facilities. A university campus potentially meets this criteria, and therefore this warrant was evaluated. The first part of this warrant can be met by exceeding a threshold for delay and volumes. For this part (Condition A), the minor stop-controlled approach must see at least four vehicle-hours of delay during the peak period. In both the morning and afternoon peak hours, less than half a vehicle-hour of delay is predicted. The warrant can also be met by a volume threshold (Condition B), however peak hour volumes are far below this threshold. Because neither Condition A nor Condition B are met, **Warrant 3 is not met in 2032**.

Warrant 4 – Pedestrian Volume

This warrant is met when the pedestrian volumes and vehicular volumes on the major street meet or exceed the threshold volumes shown on Figure 4C-5 in the MUTCD during any four hours of an average day or meet or exceed the threshold volumes shown on Figure 4C-7 in the MUTCD during any one hour of an average day. During the peak hour, there were 13 pedestrians crossing the major street and 639 major street vehicles. This is significantly below the threshold. As a result, **Warrant 4 is not met.**

Warrant 5 – School Crossing

This warrant used when the intersection is in a location where schoolchildren are expected to cross the major street. This requires observing the intersection during school arrival and dismissal periods and counting the number of adequate crossing gaps in traffic stream. If the number of gaps is on average less than one per minute during the period when children use the crossing and there are at least 20 schoolchildren during the busiest hour, a signal can be considered. Because there are fewer than 20 pedestrians altogether (including non-schoolchildren) during peak hours, this warrant cannot be met and therefore **Warrant 5 is not satisfied.**

Warrant 6 – Coordinated Signal System

This warrant is used when a new signal is necessary to maintain proper platooning of vehicles through an adjacent system of coordinated signals. the intersection is in a location with adjacent signalized intersections that would benefit from vehicle platooning. In this case, there are no adjacent signals along Baxter Boulevard. The signals along Washington Avenue are coordinated, but a low percentage of their traffic is fed from this intersection. As a result, there is no need to platoon vehicles along Bates Street and **Warrant 6 is not met**.

Warrant 7 – Crash Experience

This warrant is intended for use when the severity and frequency of crashes are the reasons to consider a traffic control signal. Based on a review of MaineDOT crash data, four collisions have

occurred during 2020-2022. This is less than the threshold of five collisions during one year and therefore **Warrant 7 is not met**. Further, the crash pattern would need to be correctable by signalization and the warrant requires trialing other safety countermeasures before moving to signalization.

Warrant 8 – Roadway Network

This warrant is intended for use in locations where installing a traffic signal would be justified to encourage concentration and organization of traffic flow on a roadway network. This warrant is met when the intersection has a total entering volume of 1,000 vehicles per hour during the peak hour of a typical weekday and has five year projected traffic volumes that meet at least one of Warrants 1, 2, or 3. Additionally, the major route is required to be part of principal roadway network for through traffic flow, includes a rural or suburban highway around a city, or appears as a major route on an official plan.

In 2032, the peak volume of entering vehicles is projected to be 932, which is under the 1,000 entering vehicle threshold. Therefore, **Warrant 8 is not met in 2032**.

Warrant 9 – Intersection Near a Grade Crossing

This warrant is intended for use at a location where the proximity to a grade crossing is the principal reason to consider installing a traffic control signal. There are no grade crossings in the vicinity of the intersection, therefore **Warrant 9 is not applicable**.

Signal Warrant Results

Based on a review of the nine signal warrants outlined in the MUTCD, a traffic signal is not predicted to be warranted in 2032 at the intersection of Bates Street with Baxter Boulevard. This analysis is subject to change with the arrival of other developments, changes in background traffic, or increased crash exposure at the intersection.

This result should be considered a strong indication that, absent significant changes, this intersection is not a good candidate for signalization. Should problems with congestion, pedestrian mobility, or safety be discovered in the future, a range of alternative interventions should be considered – as is recommended by the MUTCD even if one or more warrants is met.

17

MUTCD Signal Warrant Analysis: Sherwood Street at Veranda Street

A traffic signal warrant analysis is completed based on the nine warrants outlined in the Manual on Uniform Traffic Control Devices (MUTCD), 11th Edition, Chapter 4C. The nine warrants are as follows:

- Warrant 1 – Eight Hour Vehicular Volume
- Warrant 2 – Four Hour Vehicular Volume
- Warrant 3 – Peak Hour
- Warrant 4 – Pedestrian Volumes
- Warrant 5 – School Crossing
- Warrant 6 – Coordinated Signal System
- Warrant 7 – Crash Experience
- Warrant 8 – Roadway Network
- Warrant 9 – Intersection Near a Grade Crossing

Warrants 1, 2, and 3 are based on the number of vehicles moving through the intersection and are most commonly used. Warrants 4-9 are based on other characteristics of the intersection and surrounding roadway network. The MUTCD states that a traffic control signal should not be installed unless one or more of the warrants is met. These warrants were evaluated for the intersection of Sherwood Street and Veranda Street as described below and detailed in Attachment 7F.

Traffic Volumes

Warrants 1-3 are based on the hourly volume of traffic moving through the intersection on an average day. These warrants were evaluated based on projected volumes for 2032, including new traffic generated by this development. The basis for these projections are turning movement counts completed at the intersection of Veranda Street with Sherwood Street on Wednesday, ay 31, 2023 from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. The following summarizes the adjustments made to the turning movement counts to predict volumes on an average day in 2032. In addition to these adjustments, new trips were added for this development as discussed elsewhere in this study.

Seasonal Adjustment

MaineDOT weekly group mean factors were used to adjust the traffic volumes to those anticipated to be experienced on an average day. For turning movement counts collected during the week of May 29, an adjustment of 1.01 was applied to the raw volumes.

Annual Growth

In addition to a seasonal adjustment, an annual growth rate was applied to estimate the traffic volumes that will be experienced during the analysis year. The signal warrant analysis is being completed for 2032 and an annual growth rate of 0.5% per year has been applied to the seasonally adjusted volumes, as directed by MaineDOT staff.

24-Hour Projection

Based on a short-term count conducted by Maine DOT along Veranda Street south of the intersection, hour-by-hour traffic volumes as a percentage of the peak hour were calculated. These were scaled by the 2032 Build Projections to determine the highest, 4th highest, and 8th highest hourly volumes needed to evaluate the signal warrants.

Warrant 1 – Eight Hour Vehicular Volume

This warrant is intended to be used when traffic volumes on both the major and minor streets meet or exceed the threshold volumes during eight hours of the average day. The MUTCD allows that if the posted or 85th percentile speed on the major road exceeds 40 mph or if the intersection is in a community with a population of less than 10,000, the hourly traffic volumes required to meet the warrant are reduced to 70% of the original threshold volumes. Based on 2022 US Census estimates, the City of Portland has a population of 68,424, which does not allow the 70% threshold volumes to be used.

For the number of lanes present at this intersection, the warrant requires that a minimum hourly volume of 500 vehicles on the major street (sum of both approaches) and 200 vehicles on the minor approach be sustained for any eight hours of the typical day. This is only satisfied for four hours of the day. We can therefore conclude that **Warrant 1 will not be met in 2032.**

Warrant 2 – Four Hour Vehicular Volume

This warrant is met when traffic volumes on both the major and minor streets meet or exceed the threshold volumes during four hours of the average day. Like Warrant 1, the MUTCD allows that if the posted or 85th percentile speed on the major road exceeds 40 mph or if the intersection is in a community with a population of less than 10,000, the hourly traffic volumes required to meet the warrant can be reduced to 70% of the original threshold volumes, which has not been used. As shown in the Appendix, the fourth-highest hourly volume is below this threshold. Because the minimums are not met for at least four hours of the average day, we can conclude that **Warrant 2 is not met in 2032.**

Warrant 3 – Peak Hour Vehicular Volume

This warrant is met by either exceeding a minimum volume threshold or minimum combined volume and delay threshold. This warrant is limited to locations influenced by generators that surge large numbers of vehicles during a short period of time such as office complexes or industrial facilities. A university campus potentially meets this criteria, and therefore this warrant was evaluated. The first part of this warrant can be met by exceeding a threshold for delay and volumes. The minimum volumes are met for this part (Condition A). This condition also requires that the total stopped-time delay experienced by the traffic on the minor-street approach exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach. During the peak hour, total stopped-time delay for westbound Sherwood Street is 4.11 vehicle-hours. This would satisfy Condition A under the current intersection configuration, however with the planned improvements that separate left and right turns into two lanes, the condition is not met.

Warrant 3 also offers a volume-only condition (Condition B). The warrant can also be met by a volume threshold (Condition B), however peak hour volumes are far below this threshold. Because neither Condition A nor Condition B are met, **Warrant 3 is not met in 2032**.

Warrant 4 – Pedestrian Volume

This warrant is met when the pedestrian volumes and vehicular volumes on the major street meet or exceed the threshold volumes shown on Figure 4C-5 in the MUTCD during any four hours of an average day or meet or exceed the threshold volumes shown on Figure 4C-7 in the MUTCD during any one hour of an average day. Current pedestrian volumes are very low – only three per hour. This development is expected to add approximately 200 pedestrian trips during the PM peak hour. Even under the conservative assumption that all pedestrians travel through the intersection (versus using potential trail connections) and cross Veranda here instead of at another signal, the four-hour pedestrian warrant (Condition A) may be met for two out of the four required hours while the peak hour pedestrian warrant (Condition B) would not be met. As a result, **Warrant 4 is not met in 2032.**

Warrant 5 – School Crossing

This warrant used when the intersection is in a location where schoolchildren are expected to cross the major street. This requires observing the intersection during school arrival and dismissal periods and counting the number of adequate crossing gaps in traffic stream. If the number of gaps is on average less than one per minute during the period when children use the crossing and there are at least 20 schoolchildren during the busiest hour, a signal can be considered. Because there are fewer than 20 pedestrians altogether (including non-schoolchildren) during peak hours, this warrant cannot be met and therefore **Warrant 5 is not satisfied.**

Warrant 6 – Coordinated Signal System

This warrant is used when a new signal is necessary to maintain proper platooning of vehicles through an adjacent system of coordinated signals. the intersection is in a location with adjacent signalized intersections that would benefit from vehicle platooning. The adjacent signals (to the

north at I-295 and to the south at Washington Ave) are not currently coordinated with each other and so **Warrant 6 cannot be met**.

Warrant 7 – Crash Experience

This warrant is intended for use when the severity and frequency of crashes are the reasons to consider a traffic control signal. Based on a review of MaineDOT crash data, three collisions have occurred at or adjacent to this intersection from 2020-2022. This is less than the threshold of five collisions during one year and therefore **Warrant 7 is not met**. Further, the crash pattern would need to be correctable by signalization and the warrant requires trialing other safety countermeasures before moving to signalization.

Warrant 8 – Roadway Network

This warrant is intended for use in locations where installing a traffic signal would be justified to encourage concentration and organization of traffic flow on a roadway network. This warrant is met when the intersection has a total entering volume of 1,000 vehicles per hour during the peak hour of a typical weekday and has five year projected traffic volumes that meet at least one of Warrants 1, 2, or 3. Additionally, the major route is required to be part of principal roadway network for through traffic flow, includes a rural or suburban highway around a city, or appears as a major route on an official plan.

In 2032, the peak volume of entering vehicles is projected to be 1,077, which narrowly clears the 1,000 entering vehicle threshold. However, Warrants 1, 2, and 3 are not projected to be met within five years. As a result, **Warrant 8 is not met in 2032**.

Warrant 9 – Intersection Near a Grade Crossing

This warrant is intended for use at a location where the proximity to a grade crossing is the principal reason to consider installing a traffic control signal. There are no grade crossings in the vicinity of the intersection, therefore **Warrant 9 is not applicable**.

Signal Warrant Results

Based on a review of the nine signal warrants outlined in the MUTCD, a traffic signal is not predicted to be warranted in 2032 at the intersection of Sherwood Street with Veranda Street. This analysis is subject to change with the arrival of other developments, changes in background traffic, or increased crash exposure at the intersection.

Although a signal will not be appropriate within the timeframe of this study, these warrants should be evaluated again in 5-10 years. By that point, the intersection is projected to be closer to thresholds and shifts in external factors may push some warrants, particularly Warrants 2 and 4, over the line. Even in that case, alternative interventions should be considered as is recommended by the MUTCD.

18

Recommendations

The assessments presented above indicate that several multi modal transportation improvements would benefit the mobility within the study area and project site. The transportation impacts of the project will be mitigated with enhancements to vehicle, pedestrian, bicycle, and transit infrastructure. The transportation improvements described in this section will be implemented prior to the occupancy of the project.

Sherwood Street Improvements

The Roux Institute at Northeastern University is committed to improve pedestrian and bicycle safety and connectivity along Sherwood Street between the project site and Veranda Street. Sherwood Street will be reconstructed to provide continuous accommodation for pedestrians on both sides of Sherwood Street in addition to accommodation for cyclists. Although a design for bicycle lanes was developed for Sherwood Street, based on input from the City, there is a preference for a shared use path on the north side of Sherwood and a sidewalk on the south site rather than dedicated bike lane on both sides. The Roux Institute at Northeastern University is committed to accommodate all three modes in the reconstruction of Sherwood Street.

Sherwood Street Traffic Calming

Field observations were conducted on January 4, 2023 to understand the parking impacts and effective width of Sherwood Street between Veranda Street and Presumpscot Street. Sherwood Street is between 20-24 feet in width, however, with a parked car on just one side, that effective width reduces to approximately 14 feet which is only wide enough for single car passage. Observations indicate that on January 4, 2023 at 7:30 am there were a total of 0 vehicles parked on the north side and 6 vehicles parked on the south side that created single lane passage for approximately 300 feet from Veranda Street. Later that day at 4:30 pm, observations indicate that there was a total of 0 vehicles parked on the north side and 3 vehicles parked on the south side that created single lane passage for approximately 200 feet. These vehicles create a narrowing at

the gateway into Sherwood Street north of Veranda Street, however, beyond this point, no vehicles were noted parked on Sherwood Street.

In order to deter drivers from using Sherwood Street to the west of Veranda Street as a cut-through, a speed hump is recommended as shown in Figure 16. This will be a reminder for drivers to slow down and make it less attractive to use this route as a cut through. Speed humps are typically raised areas of pavement 12 to 14 feet in length and located midblock. They are 3 to 4 inches in height and have signage warning drivers in advance of the speed hump. Located this speed hump in the vicinity of the driveway from the Presumpscot School will have the added benefit of slowing down traffic in this critical area.

In addition to the speed hump in the vicinity of the school driveway, a gateway treatment could be considered at the intersection of Sherwood Street and Presumpscot Street. Narrowing Sherwood Street at this entry point would disincentivize trips down this roadway, or at a minimum, reduce the speed of vehicles making this maneuver.

Signal / Intersection Improvements

The Roux Institute at Northeastern University is committed to improve the signalized study area intersections with the following modifications:

- Field adjust signal timings, offsets, and splits
- Investigate technological solutions to address Metro needs in order to restrict left turns off Veranda Street to I-295 on-ramps

Traffic Monitoring

After the project is occupied, a post-occupancy evaluation will be performed at Veranda Street / Washington Avenue / Bates Street / I-295 Ramps and intersection operation at Veranda Street / Sherwood Street. Additional monitoring will be required as a part of the TDM Plan.

Safety Improvements

Infrastructure improvements are recommended to improve safety at study area intersections. Based on the crash history, the following items are proposed:

- Consider access management measures along the HCL segments
- Evaluate clearance intervals given the crash history

Metro Bus Improvements

The Roux Institute at Northeastern University is working with Metro to improve the quality and frequency of transit connections to the campus. Construction of a transit stop and turnaround on the campus to enable Metro bus service on site will increase the convenience of transit for commuting to and from campus. The Roux Institute at Northeastern University will promote and

incentivize transit use by subsidizing transit passes for students, staff, and faculty and will continue to work with Metro to increase ridership and reduce headways and improve service.

On-Site Multi-Use Path

On-site pedestrian facilities will connect site uses and points along the waterfront. Improvements to pedestrian connections will increase walkability for the site.

Figure 16 On-Site Multi-Use Path



19

Summary and Conclusions

The Roux Institute at Northeastern University plans to relocate its Portland, Maine campus to the former B&M Baked Beans site at 1 Beanpot Circle. The campus will accommodate 3,123 students by 2032 and provide a day care center and academic café to serve campus users. The campus will open with a 625-space parking structure with 14 exterior vehicular parking spaces.

The proposed campus is anticipated to generate 237 and 521 new vehicular trips during the AM and PM peak hours respectively. With these trips distributed onto the adjacent roadway network, the overall level of service is expected to operate at acceptable levels in 2032 after the recommended mitigation identified above. In addition to vehicular accommodation, the campus has committed to improve and encourage alternate mode travel to and from the site through increased infrastructure and subsidies.

The project is committed to Transportation Demand Management and will conduct traffic monitoring as the site is occupied.

Attachment 7A

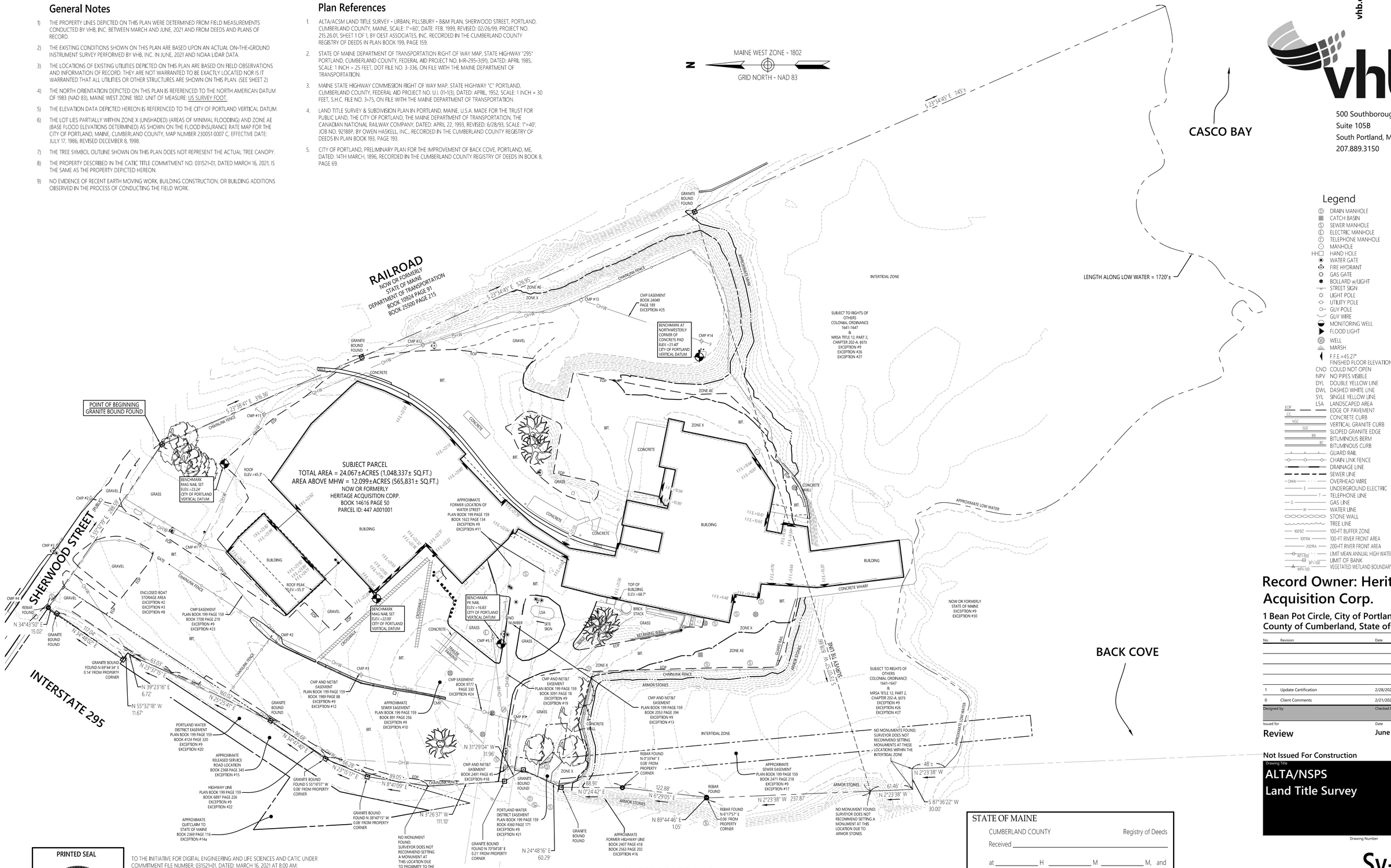
Site Plans
Site Survey

General Notes

1) THE PROPERTY LINES DEPICTED ON THIS PLAN WERE DETERMINED FROM FIELD MEASUREMENTS CONDUCTED BY VHB, INC. BETWEEN MARCH AND JUNE, 2021 AND FROM DEEDS AND PLANS OF RECORD.
2) THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY VHB, INC. IN JUNE, 2021 AND NOAA LIDAR DATA.
3) THE LOCATIONS OF EXISTING UTILITIES DEPICTED ON THIS PLAN ARE BASED ON FIELD OBSERVATIONS AND INFORMATION OF RECORD. THEY ARE NOT WARRANTED TO BE EXACTLY LOCATED NOR IS IT WARRANTED THAT ALL UTILITIES OR OTHER STRUCTURES ARE SHOWN ON THIS PLAN. (SEE SHEET 2)
4) THE NORTH ORIENTATION DEPICTED ON THIS PLAN IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD 83), MAINE WEST ZONE 1802. UNIT OF MEASURE: US SURVEY FOOT.
5) THE ELEVATION DATA DEPICTED HEREON IS REFERENCED TO THE CITY OF PORTLAND VERTICAL DATUM.
6) THE LOT LIES PARTIALLY WITHIN ZONE X (UNSHADED) (AREAS OF MINIMAL FLOODING) AND ZONE AE (BASE FLOOD ELEVATIONS DETERMINED) AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR THE CITY OF PORTLAND, MAINE, CUMBERLAND COUNTY, MAP NUMBER 230051 0007 C, EFFECTIVE DATE: JULY 17, 1986, REVISED DECEMBER 8, 1998.
7) THE TREE SYMBOL OUTLINE SHOWN ON THIS PLAN DOES NOT REPRESENT THE ACTUAL TREE CANOPY.
8) THE PROPERTY DESCRIBED IN THE CATIC TITLE COMMITMENT NO. 031521-01, DATED MARCH 16, 2021, IS THE SAME AS THE PROPERTY DEPICTED HEREON.
9) NO EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION, OR BUILDING ADDITIONS OBSERVED IN THE PROCESS OF CONDUCTING THE FIELD WORK.

Plan References

1. ALTA/ACSM LAND TITLE SURVEY - URBAN, PILLSBURY - B&M PLAN. SHERWOOD STREET, PORTLAND, CUMBERLAND COUNTY, MAINE, SCALE: 1"=60', DATE: FEB. 1999, REVISED: 02/26/99, PROJECT NO. 215.26.01, SHEET 1 OF 1, BY OEST ASSOCIATES, INC. RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 199, PAGE 159.
2. STATE OF MAINE DEPARTMENT OF TRANSPORTATION RIGHT OF WAY MAP, STATE HIGHWAY "295" PORTLAND, CUMBERLAND COUNTY, FEDERAL AID PROJECT NO. I-IR-295-3(91), DATED: APRIL 1985, SCALE: 1 INCH = 25 FEET, DOT FILE NO. 3-336, ON FILE WITH THE MAINE DEPARTMENT OF TRANSPORTATION.
3. MAINE STATE HIGHWAY COMMISSION RIGHT OF WAY MAP, STATE HIGHWAY "C" PORTLAND, CUMBERLAND COUNTY, FEDERAL AID PROJECT NO. U.I. 01-1(3), DATED: APRIL, 1952, SCALE: 1 INCH = 30 FEET, S.H.C. FILE NO. 3-75, ON FILE WITH THE MAINE DEPARTMENT OF TRANSPORTATION.
4. LAND TITLE SURVEY & SUBDIVISION PLAN IN PORTLAND, MAINE, U.S.A. MADE FOR THE TRUST FOR PUBLIC LAND, THE CITY OF PORTLAND, THE MAINE DEPARTMENT OF TRANSPORTATION, THE CANADIAN NATIONAL RAILWAY COMPANY, DATED: APRIL 22, 1993, REVISED: 6/28/93, SCALE: 1"=40', JOB NO. 92188P, BY OWEN HASKELL, INC., RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 193, PAGE 193.
5. CITY OF PORTLAND, PRELIMINARY PLAN FOR THE IMPROVEMENT OF BACK COVE, PORTLAND, ME, DATED: 14TH MARCH, 1896, RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 8, PAGE 69.



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500 Southborough Drive
Suite 105B
South Portland, ME 04106
207.889.3150

Legend

- DRAIN MANHOLE
- CATCH BASIN
- SEWER MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- MANHOLE
- HH HAND HOLE
- WATER GATE
- FIRE HYDRANT
- GAS GATE
- BOLLARD w/LIGHT
- STREET SIGN
- LIGHT POLE
- UTILITY POLE
- GUY POLE
- GUY WIRE
- MONITORING WELL
- FLOOD LIGHT
- W WELL
- MARSH
- F.F.E.=45.27' FINISHED FLOOR ELEVATION
- CNO COULD NOT OPEN
- NPV NO PIPES VISIBLE
- DYL DOUBLE YELLOW LINE
- DWL DASHED WHITE LINE
- SYL SINGLE YELLOW LINE
- LSA LANDSCAPED AREA
- EOP EDGE OF PAVEMENT
- CC CONCRETE CURB
- VGC VERTICAL GRANITE CURB
- SGE SLOPED GRANITE EDGE
- BB BITUMINOUS BERM
- BC BITUMINOUS CURB
- GUARD RAIL
- CHAIN LINK FENCE
- DRAINAGE LINE
- SEWER LINE
- OHW OVERHEAD WIRE
- E UNDERGROUND ELECTRIC
- T TELEPHONE LINE
- G GAS LINE
- W WATER LINE
- STONE WALL
- TREE LINE
- 100'BZ 100-FT BUFFER ZONE
- 100'RA 100-FT RIVER FRONT AREA
- 200'RA 200-FT RIVER FRONT AREA
- AHTL=100 LIMIT MEAN ANNUAL HIGH WATER
- BH=100 LIMIT OF BANK
- WFT=100 VEGETATED WETLAND BOUNDARY

Record Owner: Heritage Acquisition Corp.

1 Bean Pot Circle, City of Portland
County of Cumberland, State of Maine

No.	Revision	Date	Appvd.
1	Update Certification	2/28/2022	JSG
0	Client Comments	2/21/2022	JSG

Designed by | Checked by

Issued for: **Review** — Date: **June 30, 2021**

Not Issued For Construction

Drawing Title
ALTA/NSPS Land Title Survey

Drawing Number
Sv-1

Sheet 1 of 3

Project Number
58570.00

PRINTED SEAL

STATE OF MAINE — JEFFREY SHERMAN GREINER — 2539 — PROFESSIONAL LAND SURVEYOR

TO THE INITIATIVE FOR DIGITAL ENGINEERING AND LIFE SCIENCES AND CATIC UNDER COMMITMENT FILE NUMBER: 031521-01, DATED: MARCH 16, 2021 AT 8:00 AM:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 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, 7(c), 8, 13, 16, AND 20 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED IN JUNE, 2021.

BY Jeffrey Sherman Greiner 2/28/2022
JEFFREY SHERMAN GREINER, P.L.S. #2539 DATE

STATE OF MAINE

CUMBERLAND COUNTY Registry of Deeds

Received _____

at _____ H _____ M _____ M, and

recorded in Book _____ Page _____

ATTEST:

_____ Registrar

Record Owner

HERITAGE ACQUISITION CORP.
4 GATEHOUSE DR. SUITE 110
PARSIPPANY, NJ 07054
PARCEL ID: 447 A001001
BOOK 14616 PAGE 50

Saved Monday, February 28, 2022 10:15:02 AM JGREINER Plotted Monday, February 28, 2022 10:17:10 AM Jeffrey Greiner

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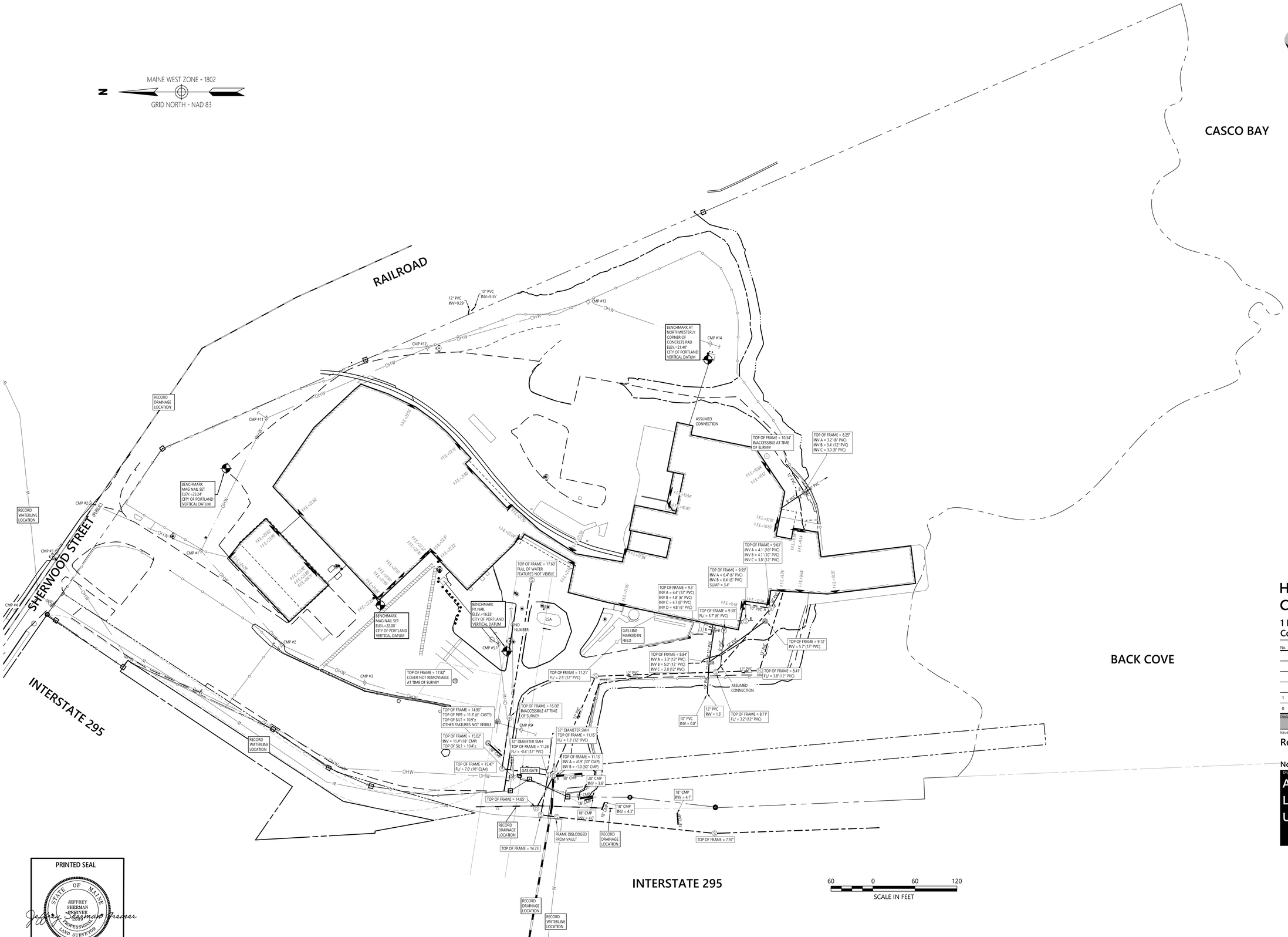
500 Southborough Drive
Suite 105B
South Portland, ME 04106
207.889.3150



Legend

- DRAIN MANHOLE
- CATCH BASIN
- SEWER MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- MANHOLE
- HH HAND HOLE
- WATER GATE
- FIRE HYDRANT
- GAS GATE
- BOLLARD w/LIGHT
- STREET SIGN
- LIGHT POLE
- UTILITY POLE
- GUY POLE
- GUY WIRE
- MONITORING WELL
- FLOOD LIGHT
- W WELL
- MARSH
- F.F.E. =45.27' FINISHED FLOOR ELEVATION
- CNO COULD NOT OPEN
- NPV NO PIPES VISIBLE
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- VGC VERTICAL GRANITE CURB
- SGE SLOPED GRANITE EDGE
- BB BITUMINOUS BERM
- BC BITUMINOUS CURB
- GUARD RAIL
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- DRAINAGE LINE
- SEWER LINE
- OHW OVERHEAD WIRE
- E UNDERGROUND ELECTRIC
- T TELEPHONE LINE
- G GAS LINE
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- 100'BZ 100-FT BUFFER ZONE
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- 30'+/-EM LIMIT MEAN ANNUAL HIGH WATER
- BF=100 LIMIT OF BANK
- WFT-100 VEGETATED WETLAND BOUNDARY

Heritage Acquisition Corp.

1 Bean Pot Circle, City of Portland
County of Cumberland, State of Maine

No.	Revision	Date	Appvd.
1	Update Certification	2/28/2022	JSG
0	Client Comments	2/21/2022	JSG

Designed by | Checked by

Issued for: **Review** | Date: **June 30, 2021**

Not Issued For Construction

Drawing Title

ALTA/NSPS Land Title Survey Utility Compilation

Drawing Number

Sv-2

Sheet 2 of 3

Project Number **58570.00**

PRINTED SEAL

STATE OF MAINE
JEFFREY SHERMAN GREINER
2358
PROFESSIONAL LAND SURVEYOR

Jeffrey Sherman Greiner

2/28/2022

Saved Monday, February 28, 2022 10:15:02 AM JGREINER Plotted Monday, February 28, 2022 10:16:26 AM Jeffrey Greiner

Record Parcel Description

BEGINNING AT A 6-INCH BY 6-INCH GRANITE MONUMENT FOUND INSCRIBED "ECJ #356" MARKING THE SOUTHERLY SIDELINE OF SHERWOOD STREET WESTERLY SIDELINE OF SAID CANADIAN NATIONAL RAILROAD AND FURTHER DESCRIBED AS THE MOST NORTHEASTERLY CORNER OF DESCRIBED PARCEL;

THENCE, S 23-36-55 E, ALONG SAID RAILROAD 316.33 FEET TO A 6-LNCH BY 6-LNCH GRANITE MONUMENT FOUND INSCRIBED "ECJ 356";

THENCE, S 23-36-55 E, ALONG SAID RAILROAD, 526.90 FEET, TO A 4-INCH BY 4-INCH GRANITE MONUMENT WITH A DRILL HOLE;

THENCE, S 23-36-55 E, ALONG SAID RAILROAD, 745 FEET, MORE OR LESS TO THE LOW WATER MARK OF THE CASCO BAY;

THENCE, IN A GENERAL WESTERLY DIRECTION ALONG SAID LOW WATER LINE ABOUT 1,685 FEET TO A POINT ON THE EASTERLY SIDELINE OF INTERSTATE 295;

THENCE, N 2-23-50 W, ALONG SAID SIDELINE, 48 FEET, MORE OR LESS TO A POINT;

THENCE, S 87-30-10 W, ALONG SAID SIDELINE, 30.00 FEET TO A POINT;

THENCE, N 2-23-50 W, ALONG SAID SIDELINE, 61.46 FEET TO A DRILL HOLE FOUND, SAID DRILL HOLE LYING ON A TIE COURSE OF S 73-07-39 W, 878.87 FEET FROM THE PREVIOUS MENTIONED 4-INCH BY 4-INCH GRANITE MONUMENT WITH A DRILL HOLE;

THENCE, N 2-23-50 W, ALONG SAID SIDELINE, 237.87 FEET TO A 5/8 INCH RE-BAR FOUND CAPPED "ECJ #509";

THENCE, N 89-44-34 E, ALONG SAID SIDELINE, 1.05 FEET TO A 5/8 INCH RE-BAR FOUND CAPPED "ECJ #509";

THENCE, N 6-28-53 E, ALONG SAID SIDELINE, 122.88 FEET TO A 5/8 INCH RE-BAR FOUND CAPPED "ECJ #509";

THENCE, N 0-24-30 E, ALONG SAID SIDELINE, 88.91 FEET TO A 4-INCH BY 4-INCH GRANITE MONUMENT FOUND INSCRIBED "ECJ #509";

THENCE, N 24-48-04 E, ALONG SAID SIDELINE, 60.29 FEET TO A 6-INCH BY 6-INCH GRANITE HIGHWAY MONUMENT;

THENCE, N 31-29-16 W, ALONG SAID SIDELINE, 31.96 FEET TO A 4-INCH BY 4-INCH GRANITE MONUMENT INSCRIBED "ECJ #509";

THENCE, N 3-26-49 W, ALONG SAID SIDELINE, 111.10 FEET TO A 5/8 INCH RE-BAR FOUND CAPPED "ECJ #509";

THENCE, N 8-40-57 E, ALONG SAID SIDELINE, 89.05 FEET TO A 4-INCH BY 4-INCH GRANITE MONUMENT INSCRIBED "ECJ #509";

THENCE, N 23-15-05 E, ALONG SAID SIDELINE, 66.28 FEET TO A 4-INCH BY 4-LNCH GRANITE MONUMENT INSCRIBED "ECJ #509";

THENCE, N 34-47-28 E, ALONG SAID SIDELINE, 96.68 FEET TO A 4-LNCH BY 4-LNCH GRANITE MONUMENT INSCRIBED "ECJ #509";

THENCE, N 25-25-29 E, ALONG SAID SIDELINE, 160.02 FEET TO A 5/8 INCH RE-BAR FOUND CAPPED "ECJ #509";

THENCE, N 23-37-03 E, ALONG SAID SIDELINE, 63.03 FEET TO A 4-INCH BY 4-INCH GRANITE MONUMENT INSCRIBED "ECJ #509";

THENCE, N 39-23-04 E, ALONG SAID SIDELINE, 6.72 FEET TO A 6-INCH BY 6-INCH GRANITE MONUMENT FOUND INSCRIBED "ECJ #509";

THENCE, N 55-32-30 W, ALONG SAID SIDELINE, 11.67 FEET TO A 4-INCH BY 4-INCH GRANITE MONUMENT INSCRIBED "ECJ #509";

THENCE, N 34-47-50 E, ALONG SAID SIDELINE, 117.04 FEET TO A 4-INCH BY 4-INCH GRANITE MONUMENT INSCRIBED "ECJ #509";

THENCE, N 34-43-38 E, ALONG SAID SIDELINE, 15.02 FEET TO A 5/8 INCH RE-BAR FOUND CAPPED "ECJ #509" MARKING THE SOUTHERLY SIDELINE OF SHERWOOD STREET;

THENCE, S 55-12-08 E, ALONG SAID SHERWOOD STREET, 288.60 FEET TO THE POINT OF BEGINNING.

As-Surveyed Parcel Description

BEGINNING AT A GRANITE BOUND FOUND AT THE INTERSECTION OF THE SOUTHERLY SIDELINE OF SHERWOOD STREET AND THE WESTERLY SIDELINE OF LAND NOW OR FORMERLY OF THE STATE OF MAINE AS DESCRIBED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 25500, PAGE 215, AND BOOK 10924, PAGE 91 BEING FORMERLY OWNED BY THE ST. LAWRENCE & ATLANTIC RAILROAD COMPANY, IN PART, AND THE CANADIAN NATIONAL RAILWAY COMPANY, IN PART;

THENCE ALONG THE WESTERLY SIDELINE OF LAND OF THE STATE OF MAINE SOUTH 23°38'41" EAST FOR A DISTANCE OF 316.36 FEET TO A GRANITE BOUND FOUND;

THENCE CONTINUING ALONG LAND OF THE STATE OF MAINE SOUTH 23°34'45" EAST FOR A DISTANCE OF 526.95 FEET TO A GRANITE BOUND FOUND;

THENCE CONTINUING ALONG THE LAND OF THE STATE OF MAINE SOUTH 23°34'45" EAST FOR A DISTANCE OF 745 FEET, MORE OR LESS TO THE LOW WATER MARK OF CASCO BAY;

THENCE IN A GENERALLY WESTERLY DIRECTION ALONG THE LOW WATER LINE 1,720 FEET, MORE OR LESS, TO A POINT IN THE EASTERLY SIDELINE OF INTERSTATE 295;

THENCE ALONG THE EASTERLY SIDELINE OF INTERSTATE 295 THE FOLLOWING COURSES AND DISTANCES:

NORTH 2°23'38" WEST FOR A DISTANCE OF 48 FEET, MORE OR LESS TO A POINT;

SOUTH 87°36'22" WEST FOR A DISTANCE OF 30.00 FEET TO A POINT;

NORTH 2°23'38" WEST FOR A DISTANCE OF 61.46 FEET TO A POINT BEING LOCATED SOUTH 73°07'57" WEST AT A DISTANCE OF 878.66 FEET FROM A GRANITE BOUND FOUND ON THE WESTERLY SIDELINE OF LAND NOW OR FORMERLY OF THE STATE OF MAINE;

NORTH 2°23'38" WEST FOR A DISTANCE OF 237.87 FEET TO A POINT;

NORTH 89°44'46" EAST FOR A DISTANCE OF 1.05 FEET TO A REBAR FOUND;

NORTH 6°29'05" EAST FOR A DISTANCE OF 122.88 FEET TO A POINT;

NORTH 0°24'42" EAST FOR A DISTANCE OF 88.91 FEET TO A GRANITE BOUND FOUND;

NORTH 24°48'16" EAST FOR A DISTANCE OF 60.29 FEET TO A GRANITE BOUND FOUND;

NORTH 31°29'04" WEST FOR A DISTANCE OF 31.96 FEET TO A POINT;

NORTH 3°26'37" WEST FOR A DISTANCE OF 111.10 FEET TO A POINT;

NORTH 8°41'09" EAST FOR A DISTANCE OF 89.05 FEET TO A POINT;

NORTH 23°15'17" EAST FOR A DISTANCE OF 66.28 FEET TO A POINT;

NORTH 34°47'40" EAST FOR A DISTANCE OF 96.68 FEET TO A GRANITE BOUND FOUND;

NORTH 25°25'41" EAST FOR A DISTANCE OF 160.02 FEET TO A POINT;

NORTH 23°37'15" EAST FOR A DISTANCE OF 63.03 FEET TO A POINT;

NORTH 39°23'16" EAST FOR A DISTANCE OF 6.72 FEET TO A POINT;

NORTH 55°32'18" WEST FOR A DISTANCE OF 11.67 FEET TO A POINT;

NORTH 34°48'02" EAST FOR A DISTANCE OF 117.04 FEET TO A GRANITE BOUND FOUND;

NORTH 34°43'50" EAST FOR A DISTANCE OF 15.02 FEET TO A REBAR FOUND AT THE SOUTHERLY SIDELINE OF SHERWOOD STREET;

THENCE DEPARTING FROM THE EASTERLY SIDELINE OF INTERSTATE 295 AND RUNNING ALONG THE SOUTHERLY SIDELINE OF SHERWOOD STREET SOUTH 55°12'19" EAST FOR A DISTANCE OF 288.59 FEET TO THE POINT OF BEGINNING.

SAID AS-SURVEYED PARCEL CONTAINS A TOTAL AREA OF APPROXIMATELY 24.067 ACRES, MORE OR LESS (1,048,337 SQUARE FEET, MORE OR LESS), WITH AN AREA ABOVE MEAN HIGH WATER OF APPROXIMATELY 12.099 ACRES, MORE OR LESS (565,831 SQUARE FEET, MORE OR LESS).

Title Notes

REFERENCE SHOULD BE MADE TO CATIC
ALTA COMMITMENT FOR TITLE INSURANCE
FILE NO. 031521-01 DATE OF MARCH 16, 2021 AT 8:00 AM.

1. ANY DEFECT, LIEN, ENCUMBRANCE, ADVERSE CLAIM, OR OTHER MATTER THAT APPEARS FOR THE FIRST TIME IN THE PUBLIC RECORDS OR IS CREATED, ATTACHES, OR IS DISCLOSED BETWEEN THE COMMITMENT DATE AND THE DATE ON WHICH ALL OF THE SCHEDULE B, PART I--REQUIREMENTS ARE MET.
   NOT SURVEY RELATED

2. RIGHTS OR CLAIMS OF PERSONS IN POSSESSION, OTHER THAN THE INSURED, WHICH ARE NOT SHOWN BY THE PUBLIC RECORDS.
   NOT SURVEY RELATED

3. ANY EASEMENTS OR CLAIMS OF EASEMENTS NOT SHOWN BY THE PUBLIC RECORDS, BOUNDARY LINE DISPUTES, OVERLAPS, ENCROACHMENTS, TITLE TO FILLED LANDS (IF ANY) AND ALL OTHER FACTS WHICH AN ACCURATE SURVEY AND INSPECTION OF THE LAND WOULD DISCLOSE AND WHICH ARE NOT SHOWN BY THE PUBLIC RECORDS. WHEN THE POLICY ISSUED IS ON A FORM HAVING A REVISION DATE OF 6-17-06, THIS EXCEPTION ALSO REFERS TO ALL THOSE MATTERS DESCRIBED IN COVERED RISK 2(C).
   NOTED ON PLAN

4. UNRECORDED MECHANICS' LIENS.
   NOT SURVEY RELATED

5. REAL ESTATE TAXES, MUNICIPAL ASSESSMENTS AND PRIVATE ASSOCIATION ASSESSMENTS, IF ANY, INCLUDING LIENS AND ASSESSMENTS, NOT YET DUE AND PAYABLE.
   NOT SURVEY RELATED

6. THE EXACT ACREAGE OR SQUARE FOOTAGE OF THE LAND WILL NOT BE INSURED.
   NOTED ON PLAN

7. TITLE TO AND RIGHTS OF THE PUBLIC AND OTHERS ENTITLED THERETO IN AND TO THOSE PORTIONS OF THE INSURED PREMISES LYING WITHIN THE BOUNDS OF ADJACENT STREETS, ROADS AND WAYS.
   NOTED ON PLAN

8. RIGHTS OF THE TENANTS IN POSSESSION AT WILL OR UNDER UNRECORDED LEASES.
   NOTED ON PLAN

9. SUCH STATE OF FACTS INCLUDING NOTES DISCLOSED ON PLAN ENTITLED "ALTA/ACSM LAND TITLE SURVEY - URBAN, PILLSBURY - B&M PLANT, SHERWOOD STREET, PORTLAND, CUMBERLAND COUNTY, MAINE FOR B&G FOODS - PILLSBURY COMPANY BY OEST ASSOCIATES, INC. DATED FEBRUARY, 1999 LAST REVISED FEBRUARY 26, 1999, RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 199, PAGE 159.
   PERTINENT INFORMATION ON REFERENCED PLAN DEPICTED HEREON

10. RIGHTS AND EASEMENT SET FORTH IN EASEMENT DEED FROM BURNHAM & MORRILL COMPANY TO SARAH JORDAN AND ISABELLE JORDAN SAUNDERS DATED APRIL 18, 1912 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 891, PAGE 256.
    NOTED ON PLAN

11. AGREEMENT BY AND BETWEEN THE CITY OF PORTLAND AND BURNHAM AND MORRILL COMPANY DATED SEPTEMBER 16, 1940 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 1622, PAGE 134.
    NOTED ON PLAN

12. RIGHTS AND EASEMENTS GRANTED BY BURNHAM & MORRILL COMPANY TO CENTRAL MAINE POWER COMPANY AND NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY BY INSTRUMENT DATED JULY 14, 1948 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 1989, PAGE 88.
    NOTED ON PLAN

13. RIGHTS AND EASEMENTS GRANTED BY BURNHAM & MORRILL COMPANY TO CENTRAL MAINE POWER COMPANY AND NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY BY INSTRUMENT DATED JULY 5, 1951 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 2053, PAGE 394.
    NOTED ON PLAN

14. NOTICE OF TAKING BY THE MAINE STATE HIGHWAY COMMISSION DATED AUGUST 12, 1953 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 2146, PAGE 400, AS AFFECTED BY:
    a. QUITCLAIM DEED WITH COVENANT GRANTED BY BURNHAM AND MORRILL COMPANY TO THE STATE OF MAINE DATED JULY 17, 1957 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 2369, PAGE 116.
    NON-LOCUS; NOTED ON PLAN

15. RELEASE FROM THE STATE OF MAINE TO BURNHAM & MORRILL COMPANY DATED AUGUST 7, 1957 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 2368, PAGE 345.
    NOTED ON PLAN

16. LAYOUT AND NOTICE OF TAKING BY THE MAINE STATE HIGHWAY COMMISSION DATED APRIL 30, 1958 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 2407, PAGE 418 AND RELATED RECEIPT OF CONFIRMATION OF TAKING BY BURNHAM & MORRILL COMPANY TO THE STATE OF MAINE DATED SEPTEMBER 11, 1960 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 2563, PAGE 202.
    NOTED ON PLAN

17. EASEMENT DEED GRANTED BY BURNHAM & MORRILL CO. TO THE CITY OF PORTLAND DATED MAY 6, 1959 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 2471, PAGE 218.
    NOTED ON PLAN

18. RIGHTS AND EASEMENTS GRANTED BY BURNHAM & MORRILL COMPANY TO CENTRAL MAINE POWER COMPANY AND NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY BY INSTRUMENT DATED MAY 1, 1959 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 2491, PAGE 45.
    NOTED ON PLAN

19. RIGHTS AND EASEMENTS GRANTED BY GEORGE C. SEYBOLT, MELVILLE CHAPIN, AND RICHARD P. CHAPMAN, TRUSTEES UNDER A DECLARATION OF TRUST DATED MAY 31, 1966 TO CENTRAL MAINE POWER COMPANY AND NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY BY INSTRUMENT DATED MARCH 4, 1969 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 3091, PAGE 18.
    NOTED ON PLAN

20. RIGHTS, EASEMENTS, TERMS AND CONDITIONS SET FORTH IN EASEMENT DEED GRANTED BY GEORGE C. SEYBOLT, MELVILLE CHAPIN, AND RICHARD CHAPMAN, TRUSTEES UNDER A DECLARATION OF TRUST FOR THE BENEFIT OF WILLIAM UNDERWOOD COMPANY DATED MAY 31, 1966, TO PORTLAND WATER DISTRICT DATED OCTOBER 26, 1977 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 4124, PAGE 320.
    NOTED ON PLAN

21. RIGHTS, EASEMENTS, TERMS AND CONDITIONS SET FORTH IN EASEMENT DEED FROM GEORGE C. SEYBOLT, MELVILLE CHAPIN, AND RICHARD CHAPMAN, TRUSTEES UNDER A DECLARATION OF TRUST FOR THE BENEFIT OF WILLIAM UNDERWOOD COMPANY DATED MAY 31, 1966 TO PORTLAND WATER DISTRICT DATED DECEMBER 20, 1978 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 4360, PAGE 171.
    NOTED ON PLAN

22. NOTICE OF LAYOUT AND TAKING BY THE STATE OF MAINE BY ITS DEPARTMENT OF TRANSPORTATION DATED SEPTEMBER 3, 1985 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 6897, PAGE 226.
    NOTED ON PLAN

23. RIGHTS AND EASEMENT GRANTED BY BURNHAM & MORRILL CO. A DIVISION OF PET INC. TO CENTRAL MAINE POWER COMPANY BY INSTRUMENT DATED OCTOBER 31, 1986 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 7708, PAGE 219.
    NOTED ON PLAN

24. RIGHTS AND EASEMENTS GRANTED BY P.E.T. INCORPORATED TO CENTRAL MAINE POWER COMPANY AND NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY, BY INSTRUMENT DATED OCTOBER 22, 1991 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 9777, PAGE 330.
    NOTED ON PLAN

25. RIGHTS AND EASEMENTS GRANTED BY HERITAGE ACQUISITION CORP. TO CENTRAL MAINE POWER COMPANY AND VERIZON NEW ENGLAND, INC. BY INSTRUMENT DATED FEBRUARY 7, 2006 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 24049, PAGE 189.
    NOTED ON PLAN

26. TITLE TO AND THE RIGHTS OF OTHERS IN AND TO THE LAND LYING BELOW THE MEAN HIGH WATER MARK.
    NOTED ON PLAN

27. RIGHTS OF THE PUBLIC UNDER THE COLONIAL ORDINANCE OF 1641-1647 AND THE FEDERAL NAVIGATIONAL SERVITUDE TO THAT PORTION OF THE PREMISES THAT LIES BELOW THE HIGH WATER MARK.
    NOTED ON PLAN

28. CLAIMS THAT SOME PORTION OF SAID LAND HAS BEEN CREATED BY ARTIFICIAL MEANS, OR HAS ACCRETED TO SUCH PORTION SO CREATED.
    NOT SURVEY RELATED

29. CLAIMS THAT SOME PORTION OF SAID LAND HAS BEEN BROUGHT WITHIN THE BOUNDARIES THEREOF BY AVULSIVE MOVEMENT OR HAS BEEN FORMED BY ACCRETION TO ANY SUCH PORTION.
    NOT SURVEY RELATED

30. OWNERSHIP RIGHTS OF THE STATE OF MAINE IN SO MUCH OF THE PREMISES AS LIES BELOW THE MEAN LOW WATER MARK AS SHOWN ON THE PLAN.
    NOTED ON PLAN

31. TERMS AND PROVISIONS CREATING A PORTION OF THE INSURED ESTATE AS EVIDENCED BY A SUBMERGED LANDS LEASE BY AND BETWEEN THE BUREAU OF PARKS AND LAND, AS AGENCY FOR THE STATE OF MAINE DEPARTMENT OF CONSERVATION, AS LANDLORD AND HERITAGE ACQUISITION CORPORATION, AS TENANT, DATED MARCH 29, 2006.
    UNABLE TO PLOT

vhb.com
vhb
500 Southborough Drive
Suite 105B
South Portland, ME 04106
207.889.3150

Heritage Acquisition Corp.

1 Bean Pot Circle, City of Portland
County of Cumberland, State of Maine

No.	Revision	Date	Appvd.
1	Update Certification	2/28/2022	JSG
0	Client Comments	2/21/2022	JSG

Designed by | Checked by

Issued for: **Review**
Date: **June 30, 2021**

Not Issued For Construction

Drawing Title:
ALTA/NSPS Land Title Survey Descriptions & Title Notes

Drawing Number:
Sv-3

Sheet 3 of 3

Project Number:
58570.00

Saved Monday, February 28, 2022 10:15:02 AM JGRENER Plotted Monday, February 28, 2022 10:15:52 AM Jeffrey Greiner

NOTES:
1. SEE LANDSCAPE PLANS FOR SITE SURFACE MATERIAL ASSOCIATED WITH LANDSCAPED AREAS, PATIOS, AND NON-BITUMINOUS WALKWAYS & ROADWAYS, PLANTING PLANS AND SITE FURNISHINGS.
2. UTILITY AND DRAINAGE STRUCTURES NOT SHOWN FOR CLARITY, SEE GRADING AND DRAINAGE AND UTILITY PLAN FOR MORE INFORMATION.
3. REFER TO SHEET C-304 FOR LINE AND CURVE LAYOUT DATA.

REFER TO CIVIL PLANS BY VHB FOR SHERWOOD STREET DESIGN
CONCRETE SIDEWALK, TYP.
PEDESTRIAN RAMP, TYP.
BIKE LANE STRIPING PER CITY OF PORTLAND TECHNICAL MANUAL
DOUBLE YELLOW CENTERLINE STRIPE, TYP.
FLUSH GRANITE CURB, TYP.
CROSSWALK, TYP.
VERTICAL GRANITE CURB, TYP.
PWD SEWER EASEMENT
STOP SIGN, TYP.
STOP BAR, TYP.
LIMIT OF WORK
PROPERTY BOUNDARY, TYP.
4" LOAM & SEED, TYP.
SIDEWALK RAMP DETECTABLE WARNING, TYP.
STOP SIGN, TYP.
STOP BAR, TYP.
CONCRETE PAD, TYP.
CONCRETE SIDEWALK, TYP.
PWD SEWER EASEMENT
BITUMINOUS PAVEMENT, TYP.
TIPDOWN, TYP.
STOP BAR, TYP.
STOP SIGN, TYP.
FLUSH GRANITE CURB, TYP.
VEHICULAR PRECAST CONCRETE PAVERS, TYP. SEE LANDSCAPE PLANS
TREE, TYP. SEE LANDSCAPE PLANS
DO NOT ENTER SIGN, TYP.
5'X8' STANDARD PAD-MOUNTED BUS SHELTER (2) MIN 2'-8" OPENING FOR EACH
ONE WAY AND ROUNDABOUT SIGN, TYP.
TIMBER GUARDRAIL, TYP. SEE LANDSCAPE PLANS
4" LOAM & SEED, TYP.
ARCHITECTURAL CONCRETE RETAINING WALL, SEE STRUCTURAL PLANS
VEHICULAR ASPHALT PAVING, TYP. SEE LANDSCAPE PLANS
ACCESSIBLE PARKING SPACE, TYP.
ONE WAY SIGN, TYP.
4" LOAM & SEED, TYP.
CURB STOP, TYP.
ACCESSIBLE PARKING SPACE SIGN (MUTCD R7-8), TYP. AT MARKED ACCESSIBLE SPACES
MOUNTABLE GRANITE CURB, TYP.
BIKE RACK, TYP. SEE LANDSCAPE PLANS
PARKING GARAGE
MATCHLINE SEE INSET A, SHT. C-303
MATCHLINE SEE SHEET C-102
MATCHLINE SEE SHEET C-102

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

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

Woodard & Curran

LAND-USE PERMIT SET

NOT FOR CONSTRUCTION

Number	Revision	Date

STATE OF MAINE
AMY N. LEBEL
17065
LICENSED PROFESSIONAL ENGINEER

Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 OCTOBER 2023
Scale	1"=20'

Drawing Title
SITE LAYOUT PLAN - 1

C-101

MATCHLINE SEE SHEET C-101

MATCHLINE SEE SHEET C-101

PARKING GARAGE

DAY CARE CENTER

LEARNING RESEARCH & COLLABORATION BUILDING

BEAN BUILDING

MATCHLINE SEE INSET A, SHT. C-303

MATCHLINE SEE INSET B, SHT. C-303

DO NOT ENTER SIGN, TYP.

ONE WAY AND ROUNDABOUT SIGN, TYP.

ONE WAY SIGN, TYP.

PEDESTRIAN RAMP, TYP.

CROSSWALK, TYP.

AUTHORIZED VEHICLES ONLY SIGN, TYP.

ACCESSIBLE PARKING SPACE, TYP.

ACCESSIBLE PARKING SPACE SIGN (MUTCD R7-8), TYP. AT MARKED ACCESSIBLE SPACES

SIDEWALK RAMP DETECTABLE WARNING, TYP.

VEHICULAR GATE WITH KNOX LOCKBOX, TYP.

CURB STOP, TYP.

FLUSH GRANITE CURB, TYP.

VERTICAL GRANITE CURB, TYP.

BITUMINOUS PAVEMENT, TYP.

CONCRETE SIDEWALK, TYP.

TIPDOWN, TYP.

PEDESTRIAN GATE, TYP.

FENCE, TYP.

PWD SEWER EASEMENT

BENCH, TYP. SEE LANDSCAPE PLANS

TREE, TYP. SEE LANDSCAPE PLANS

BIKE RACK, TYP. SEE LANDSCAPE PLANS

STAIR, TYP. SEE LANDSCAPE PLANS

STONE RETAINING WALL, TYP. SEE LANDSCAPE PLANS

VEHICULAR GRANITE PAVERS, TYP. SEE LANDSCAPE PLANS

VEHICULAR CONCRETE PAVEMENT, TYP. SEE LANDSCAPE PLANS

4" LOAM & SEED, TYP.

GRANITE COBBLESTONE PAVERS, TYP. SEE LANDSCAPE PLANS

BOLLARD, TYP. SEE LANDSCAPE PLANS

RAMP TO LOADING DOCK

MOUNTABLE GRANITE CURB, TYP.

VEHICULAR ASPHALT PAVING, TYP. SEE LANDSCAPE PLANS

TIMBER GUARDRAIL, TYP., SEE LANDSCAPE PLANS

ARCHITECTURAL CONCRETE RETAINING WALL, TYP.

ROOF OVERHANG, TYP.

PROPERTY BOUNDARY, TYP.

LIMIT OF WORK, TYP.

SEE LANDSCAPE PLANS FOR ROOF LANDSCAPING

ROOF OVERHANG

VEHICULAR PRECAST CONCRETE PAVERS, TYP. SEE LANDSCAPE PLANS

STAIR, TYP. SEE LANDSCAPE PLANS

ARCHITECTURAL CONCRETE RETAINING WALL, TYP. SEE LANDSCAPE PLANS

SEE LANDSCAPE PLAN FOR MORE DETAIL ON SURFACE MATERIALS

APPROXIMATE FLOOD ZONE LINE BY ELEVATION (EL. 9)

APPROXIMATE FEMA FLOOD ZONE LINE

APPROXIMATE FLOOD ZONE LINE

APPROXIMATE FLOOD ZONE LINE BY ELEVATION

EXISTING PIERS

ZONE AE (EL. 9)

INTERTIDAL ZONE

MEAN TIDE (0)

MHW (8.30') MLW (0.30')

MHW (7.39') MLW (0.39')

MHW (7.39')

MEAN TIDE (0)

NOTES:
1. REFER TO SHEET C-101 FOR GENERAL SITE LAYOUT PLAN NOTES.
2. REFER TO SHEET C-304 FOR LINE AND CURVE LAYOUT DATA.

20' 0 20' 40'
BAR SCALE
1" = 20'
CHECK GRAPHIC SCALE BEFORE USING

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
The Roux Institute

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LAND-USE PERMIT SET

NOT FOR CONSTRUCTION

Number	Revision	Date

STATE OF MAINE
AMY N. LEBEL
17065
LICENSED
PROFESSIONAL ENGINEER

Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 OCTOBER 2023
Scale	1"=20'

Drawing Title
SITE LAYOUT PLAN - 2

C-102

Attachment 7B

Other Developments - Regional Mapping

Regional Mapping / Identified Projects In Area



Source: MaineDOT Public Map Viwer, City of Portland

Attachment 7C

Trip Generation Calculations
Traffic Figures
Non-Vehicular Assignments

Traffic Survey for January 2023

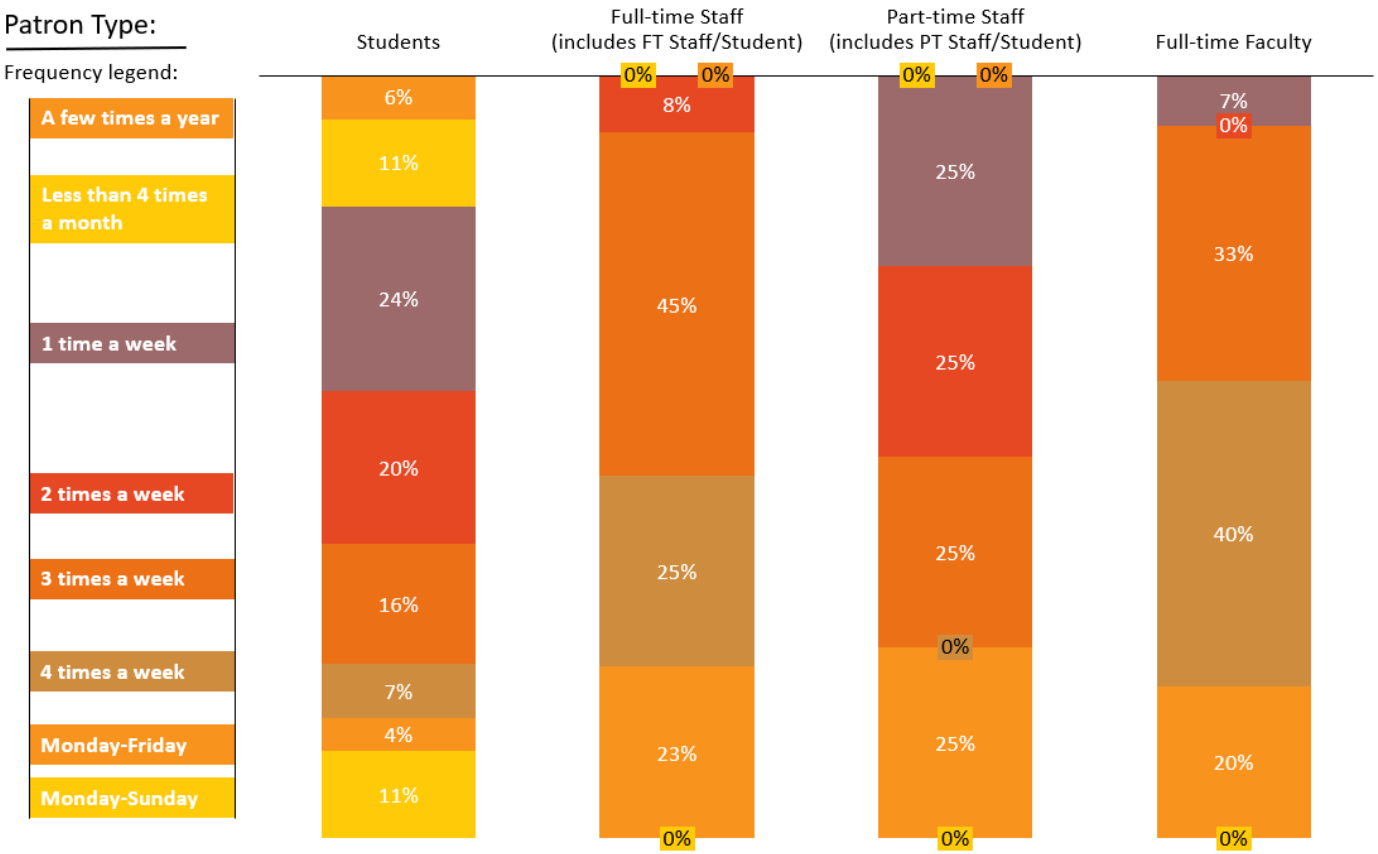
128 Responses

(7 less submissions (-5%) than August's turnout of 135)

DEMOGRAPHICS (Changes in the spread of participation from August)

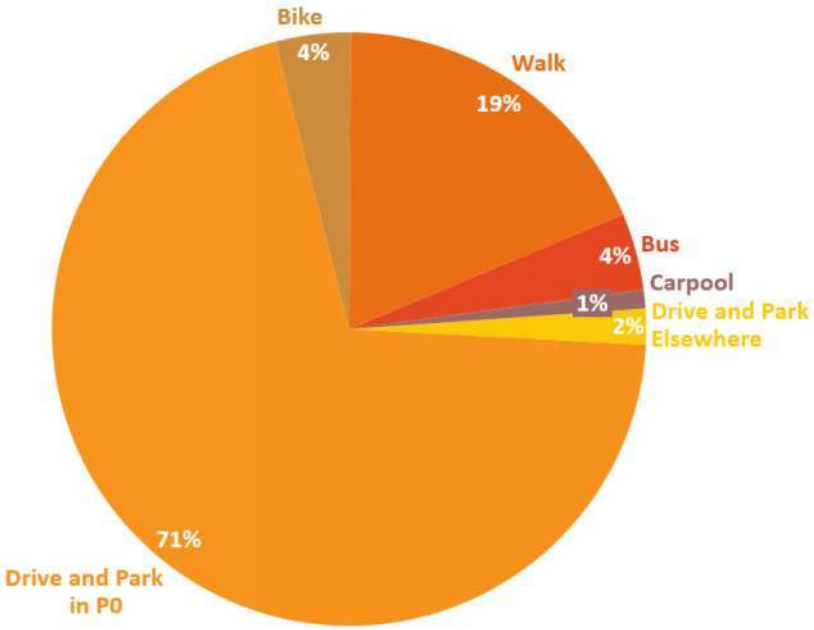
54%	Student	(+14%)
26%	Full-time Staff	(-9%)
12%	Full-time Faculty	(-1%)
4%	Both a Student & Full-time Staff	(-1%)
0%	Part-time Faculty	(-1.5%)
1%	Embedded Partner or Embedded Partner/Student	(-0.5%)
2%	Both a Full-time Staff & Part-time Faculty	(-0.5%)
2%	Part-time Staff	(+1%)

How often are you on campus?

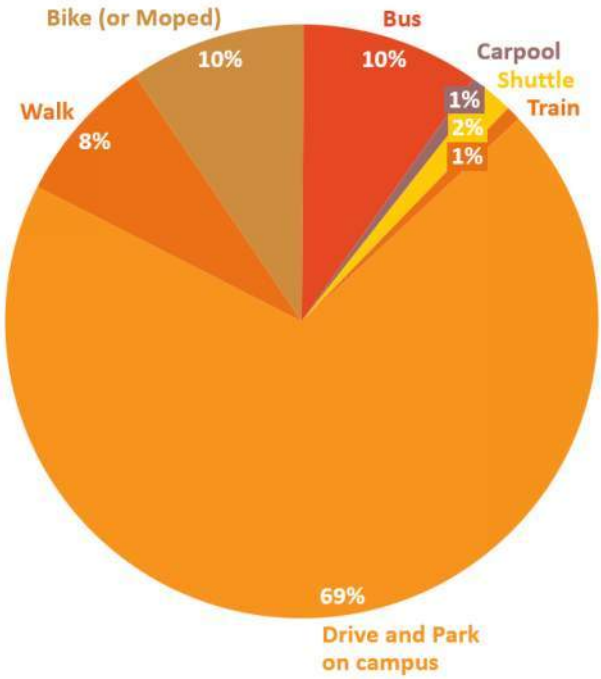


January 2023

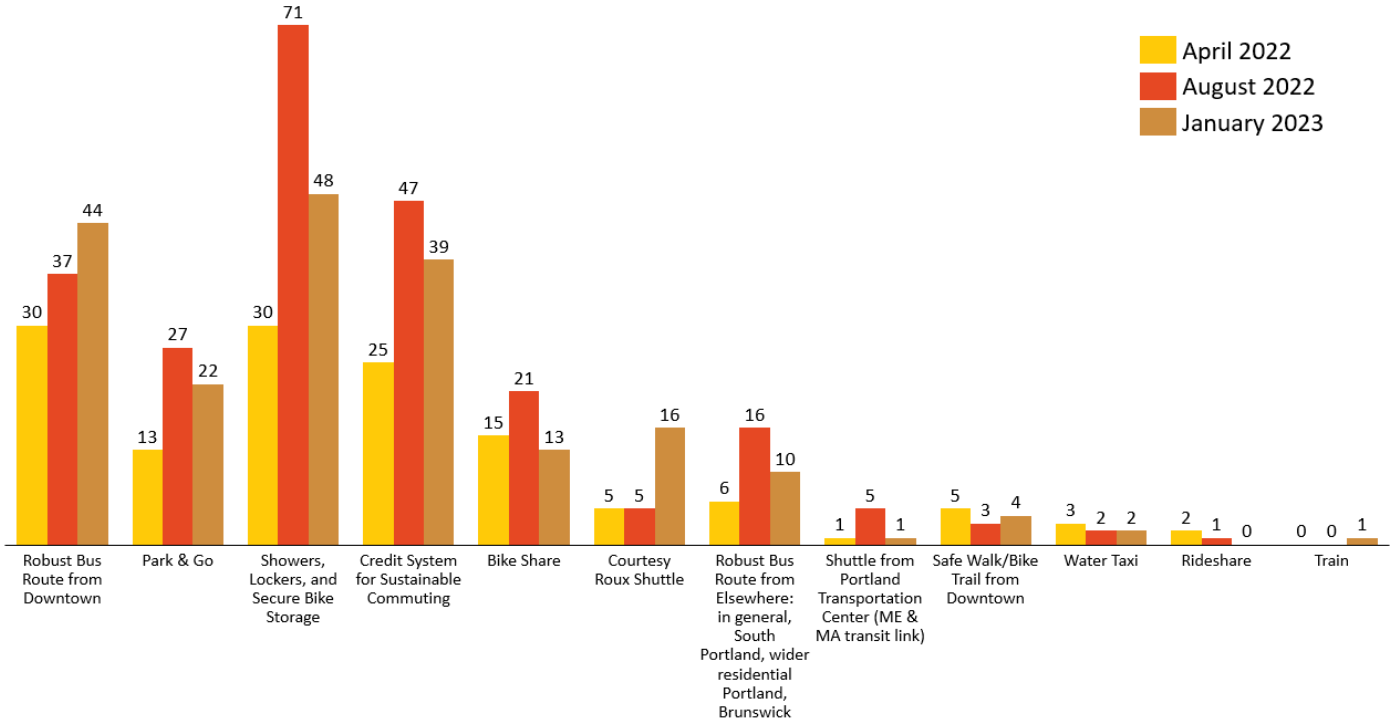
How do you commute to campus right now?



How do you imagine you'll commute to the new campus?

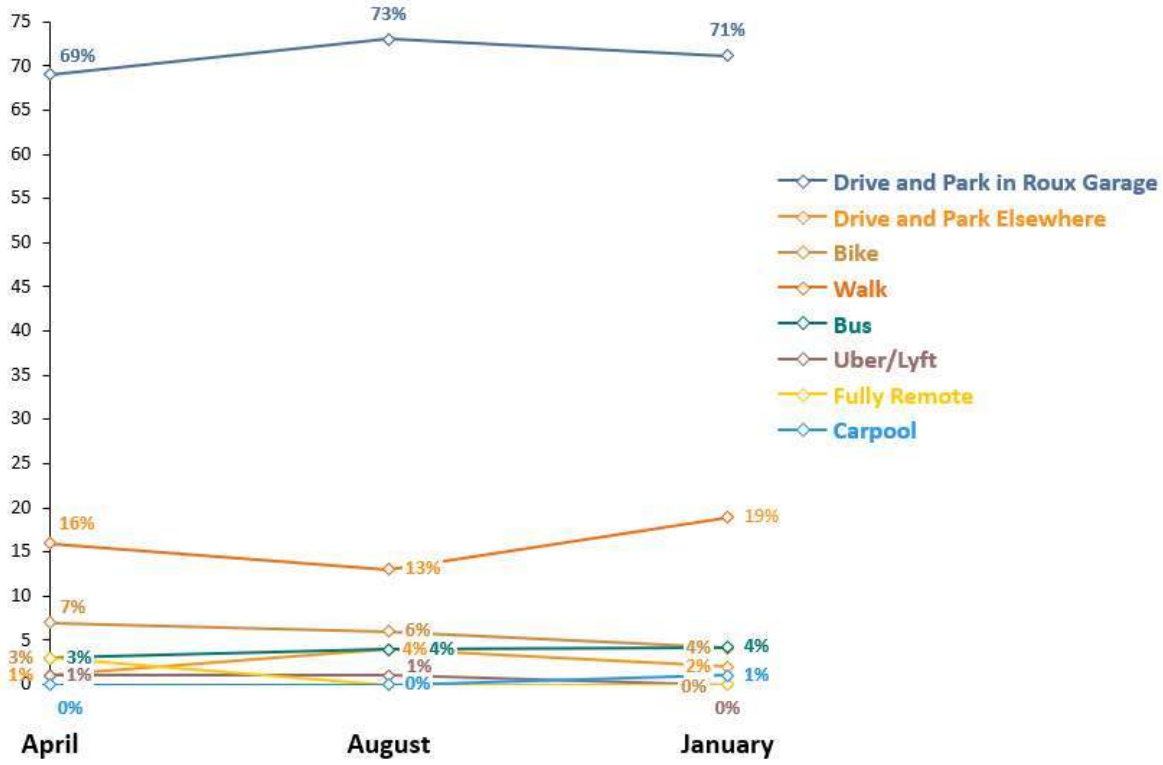


If available, what might encourage you to commute differently to the new campus?

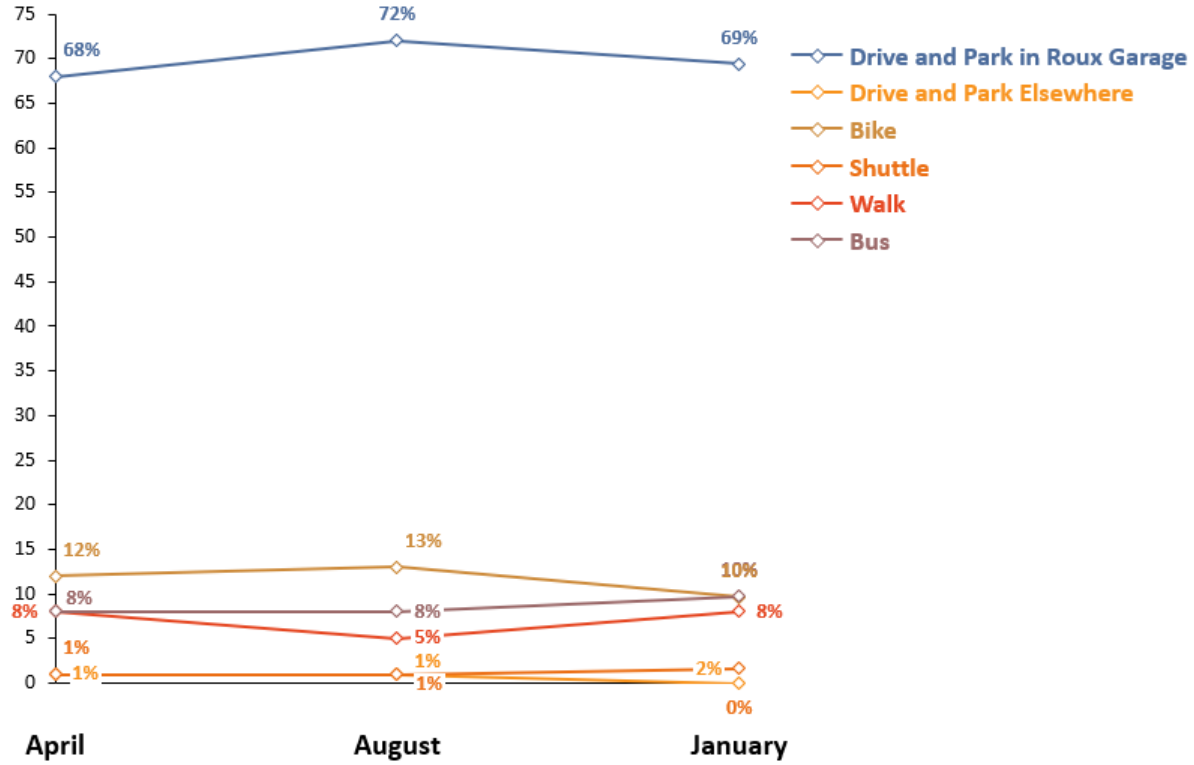


Comparisons

How does the current method of commute change over time and season?



How does the predicted method of commute to the new campus change over time and season?



Trip Generation - Opening + 5 Years program

Total Site generated trips (not accounting for internal, pass-by, or diverted trips)

Site Land Uses and Descriptions				WEEKDAY 24-HOUR TRIP GENERATION							
				average				regression		# trips	
Code	Land Use	Size	Unit	# studies	Avg Rate	Std Dev.	Total by Avg	r^2	total by Eq'n	Method Chosen	Total Trips
	Graduate Students	3123									
	AM Users, Daily On Campus	537								Custom	1074
	PM Users, Daily On Campus	806								Custom	1611
	Affiliated Users	100								Custom	200
	Special Events	150									
	Workday Events	25								Custom	50
	Lunch Events	25								Custom	50
	Night Events	100								Custom	200
710	General Office										
	Embedded Startups	100	FTEs								
	Faculty, staff, and researchers	225	FTEs								
	JAX, Signature Partners	64	FTEs	52	3.33	1.44	1295	0.86	1440	regression	1440
	Faculty - student distribution	75	FTEs							Custom	150
565	Day Care Center	50	Child Capacity	14	4.09	1.21	205	0.72	225	average	205
932	High Turnover (Sit-Down) Restaurant	8	1k sf GFA	50	107.20	66.72	858	n/a	n/a	average	858

HOURLY TRIP GENERATION

Dir	12am	1am	2am	3am	4am	5am	6am	7am	**8am**	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	**5pm**	6pm	7pm	8pm	9pm	10pm	11pm
Enter	0	0	0	0	0	0	0	54	**134**	107	134	107	0	0	0	0	161	**282**	161	81	81	40	0	0
Exit	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	54	134	161	**161**	148	121	121	282	161	0
Enter	0	0	0	0	0	0	0	10	**20**	40	20	10	0	0	0	0	0	**0**	0	0	0	0	0	0
Exit	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	0	10	20	**40**	20	10	0	0	0	0
Enter	0	0	0	0	0	0	0	5	**15**	5	0	20	5	0	0	0	10	**50**	40	0	0	0	0	0
Exit	0	0	0	0	0	0	0	0	**0**	0	0	0	0	5	20	0	5	**15**	25	50	30	0	0	0
Enter	1	0	0	0	1	3	35	98	**103**	45	40	43	73	65	60	53	39	**29**	12	6	5	4	2	3
Exit	1	1	0	1	1	1	4	14	**24**	32	43	74	73	48	47	60	109	**114**	19	17	9	12	15	2
Enter	0	0	0	0	0	0	0	3	**8**	6	8	6	0	0	0	0	9	**16**	9	5	5	2	0	0
Exit	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	3	8	9	**9**	8	7	7	16	9	0
Enter	0	0	0	0	0	1	6	20	**13**	6	3	3	2	3	4	8	14	**17**	2	0	0	0	0	0
Exit	0	0	0	0	0	0	4	17	**13**	5	3	3	3	3	5	7	14	**19**	7	0	0	0	0	0
Enter	2	0	1	1	1	3	7	12	**15**	17	24	52	53	28	17	14	27	**44**	43	31	18	11	6	2
Exit	3	1	1	2	1	1	4	8	**13**	15	19	30	53	48	22	17	17	**29**	37	39	30	21	12	6
total	7	2	2	3	5	9	60	240	**359**	277	293	348	262	200	231	311	595	**825**	532	366	306	387	206	13
enter	3	0	1	1	2	7	48	201	**308**	226	228	241	134	96	81	74	260	**437**	268	122	109	57	8	5
exit	4	2	1	2	3	2	12	39	**51**	51	65	106	128	104	150	236	336	**387**	264	244	197	330	198	8

Trip Generation developed using the ITE Trip Generation Manual, 11th Edition. 2021

Trip Generation - Opening + 5 Years program

Total Site generated trips (not accounting for internal, pass-by, or diverted trips)

Site Land Uses and Descriptions			
Code	Land Use	Size	Unit
	Graduate Students	3123	
	AM Users, Daily On Campus	537	
	PM Users, Daily On Campus	806	
	Affiliated Users	100	
	Special Events	150	
	Workday Events	25	
	Lunch Events	25	
	Night Events	100	
710	General Office		
	Embedded Startups	100	FTEs
	Faculty, staff, and researchers	225	FTEs
	JAX, Signature Partners	64	FTEs
	Faculty - student distribution	75	FTEs
565	Day Care Center	50	Child Capacity
932	High Turnover (Sit-Down) Restaurant	8	1k sf GFA

WEEKDAY 24-HOUR TRIP GENERATION							
average				regression		# trips	
# studies	Avg Rate	Std Dev.	Total by Avg	r^2	total by Eq'n	Method Chosen	Total Trips
						Custom	1074
						Custom	1611
						Custom	200
						Custom	50
						Custom	50
						Custom	200
52	3.33	1.44	1295	0.86	1440	regression	1440
						Custom	150
14	4.09	1.21	205	0.72	225	average	205
50	107.20	66.72	858	n/a	n/a	average	858

AM PEAK HOUR DETAIL								
AM PEAK HOUR	8am			Auto		Transit		Bike/Walk
All Trips	On-Site Ped Trips	External Trips	Mode Share	Trips	Mode Share	Trips	Mode Share	Trips
134	**9**	**125**	**80%**	**100**	**10%**	**13**	**10%**	**13**
0	0	**0**	80%	**0**	10%	**0**	10%	0
20	**0**	**20**	90%	**18**	5%	**1**	5%	**1**
0	0	**0**	90%	**0**	5%	**0**	5%	0
15	**0**	**15**	90%	**14**	5%	**1**	5%	**1**
0	0	**0**	90%	**0**	5%	**0**	5%	0
103	**17**	**86**	**90%**	**77**	**5%**	**4**	**5%**	**4**
24	17	**7**	90%	**7**	5%	**0**	5%	0
8	**0**	**8**	**90%**	**7**	**5%**	**0**	**5%**	**0**
0	0	**0**	90%	**0**	5%	**0**	5%	0
13	**0**	**13**	90%	**12**	5%	**1**	5%	**1**
13	10	**3**	90%	**2**	5%	**0**	5%	0
15	**15**	**0**	90%	**0**	5%	**0**	5%	**0**
13	13	**0**	90%	**0**	5%	**0**	5%	0

PM PEAK HOUR DETAIL								
PM PEAK HOUR	5pm			Auto		Transit		Bike/Walk
All Trips	On-Site Ped Trips	External Trips	Mode Share	Trips	Mode Share	Trips	Mode Share	Trips
282	**26**	**256**	**80%**	**205**	**10%**	**26**	**10%**	**26**
161	25	**136**	80%	109	10%	14	10%	14
0	**0**	**0**	90%	**0**	5%	**0**	5%	**0**
40	0	**40**	90%	36	5%	2	5%	2
50	**0**	**50**	90%	**45**	5%	**3**	5%	**3**
15	0	**15**	90%	14	5%	1	5%	1
29	**17**	**11**	**90%**	**10**	**5%**	**1**	**5%**	**1**
114	47	**67**	90%	60	5%	3	5%	3
16	**0**	**16**	**90%**	**14**	**5%**	**1**	**5%**	**1**
9	0	**9**	90%	8	5%	0	5%	0
17	**14**	**3**	90%	**3**	5%	**0**	5%	**0**
19	0	**19**	90%	17	5%	1	5%	1
44	**44**	**0**	90%	**0**	5%	**0**	5%	**0**
29	29	**0**	90%	0	5%	0	5%	0

AM Peak Hour (8am)					
All Trips	On-Site Ped	Bike/Ped	Transit	Vehicle	
308	41	20	20	227	Enter
51	41	0	0	10	Exit
359	82	20	20	237	Total

PM Peak Hour (5pm)					
All Trips	On-Site Ped	Bike/Ped	Transit	Vehicle	
437	101	30	30	276	Enter
388	101	21	21	245	Exit
825	202	51	51	521	Total

Trip Generation developed using the ITE Trip Generation Manual, 11th Edition. 2021

AM PEAK HOUR ON-SITE PED

1. Origin/Destination Pairs Calculated as a % of Trips Entering Destination Use

Origin ↓ \ Destination →	Students	Affiliated Users	Special Events	Office	Day Care Center	Cafeteria
Students						0%
Affiliated Users						
Special Events						
Office						100%
Day Care Center						
Cafeteria						

2. Origin/Destination Pairs Calculated as a % of Trips Exiting Origin Use

Origin ↓ \ Destination →	Students	Affiliated Users	Special Events	Office	Day Care Center	Cafeteria
Students						
Affiliated Users						
Special Events						
Office	10%					
Day Care Center				80%		
Cafeteria	50%			50%		

PM PEAK HOUR ON-SITE PED

1. Origin/Destination Pairs Calculated as a % of Trips Entering Destination Use

Origin ↓ \ Destination →	Students	Affiliated Users	Special Events	Office	Day Care Center	Cafeteria
Students				10%		50%
Affiliated Users						
Special Events						
Office					80%	50%
Day Care Center						
Cafeteria						

2. Origin/Destination Pairs Calculated as a % of Trips Exiting Origin Use

Origin ↓ \ Destination →	Students	Affiliated Users	Special Events	Office	Day Care Center	Cafeteria
Students						
Affiliated Users						
Special Events						
Office	10%					
Day Care Center						
Cafeteria	50%			50%		

CALCULATED ON-SITE PED TRIPS

AM PEAK HOUR

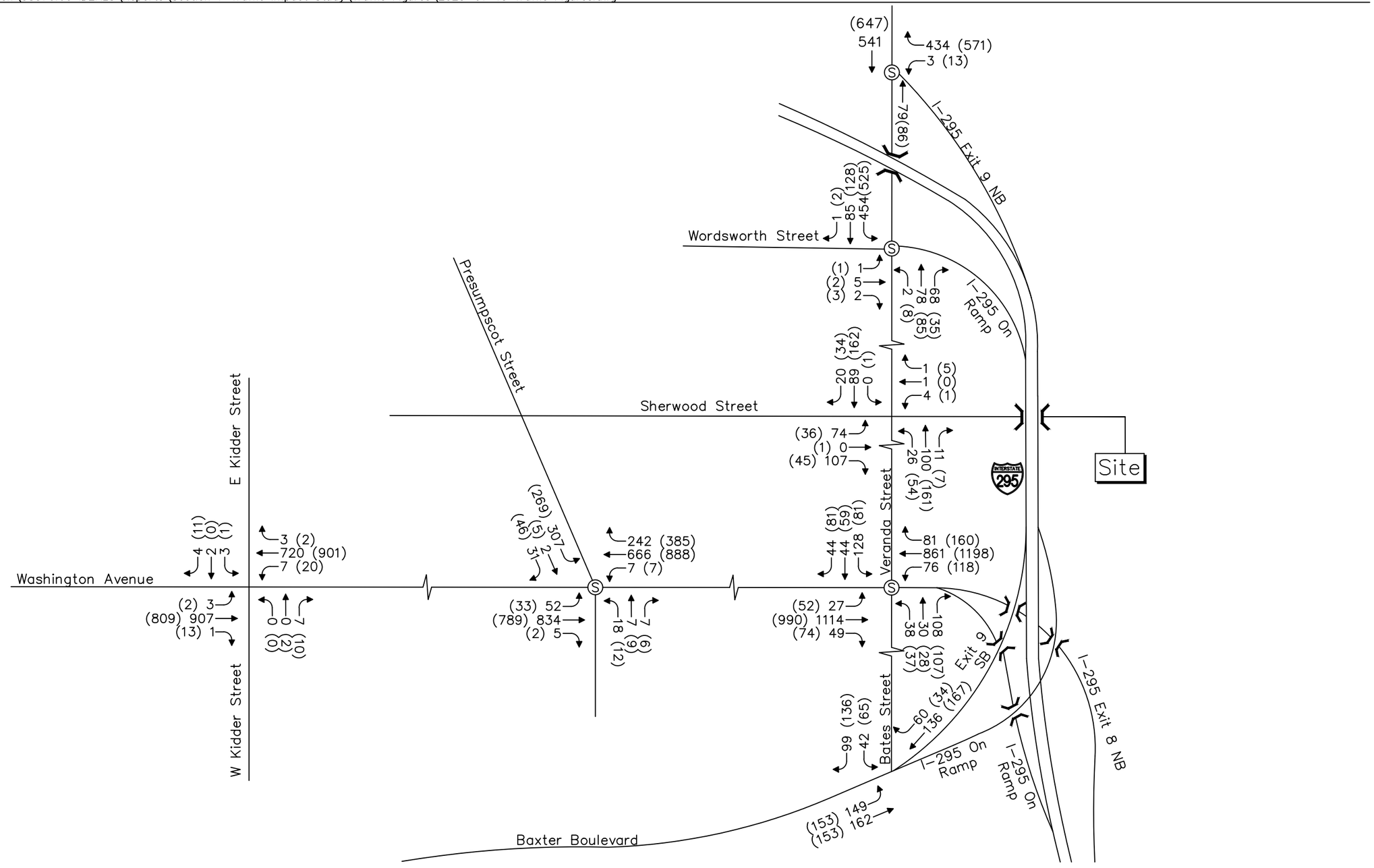
Total Exit	Origin ↓ \ Destination →	Students (Total Entering: 134)	Affiliated Users (20)	Special Events (15)	Office (103)	Day Care Center (13)	Cafeteria (15)
0	Students						
0	Affiliated Users						
0	Special Events						
24	Office	2					15
13	Day Care Center				10		
13	Cafeteria	7			7		

PM PEAK HOUR

Total Exit	Origin ↓ \ Destination →	Students (Total Entering: 282)	Affiliated Users (0)	Special Events (50)	Office (29)	Day Care Center (17)	Cafeteria (44)
161	Students				3		22
40	Affiliated Users						
15	Special Events						
114	Office	11				14	22
19	Day Care Center						
29	Cafeteria	15			15		

Hourly Distribution of Entering and Exiting Trips, as a % of 24-hour trips

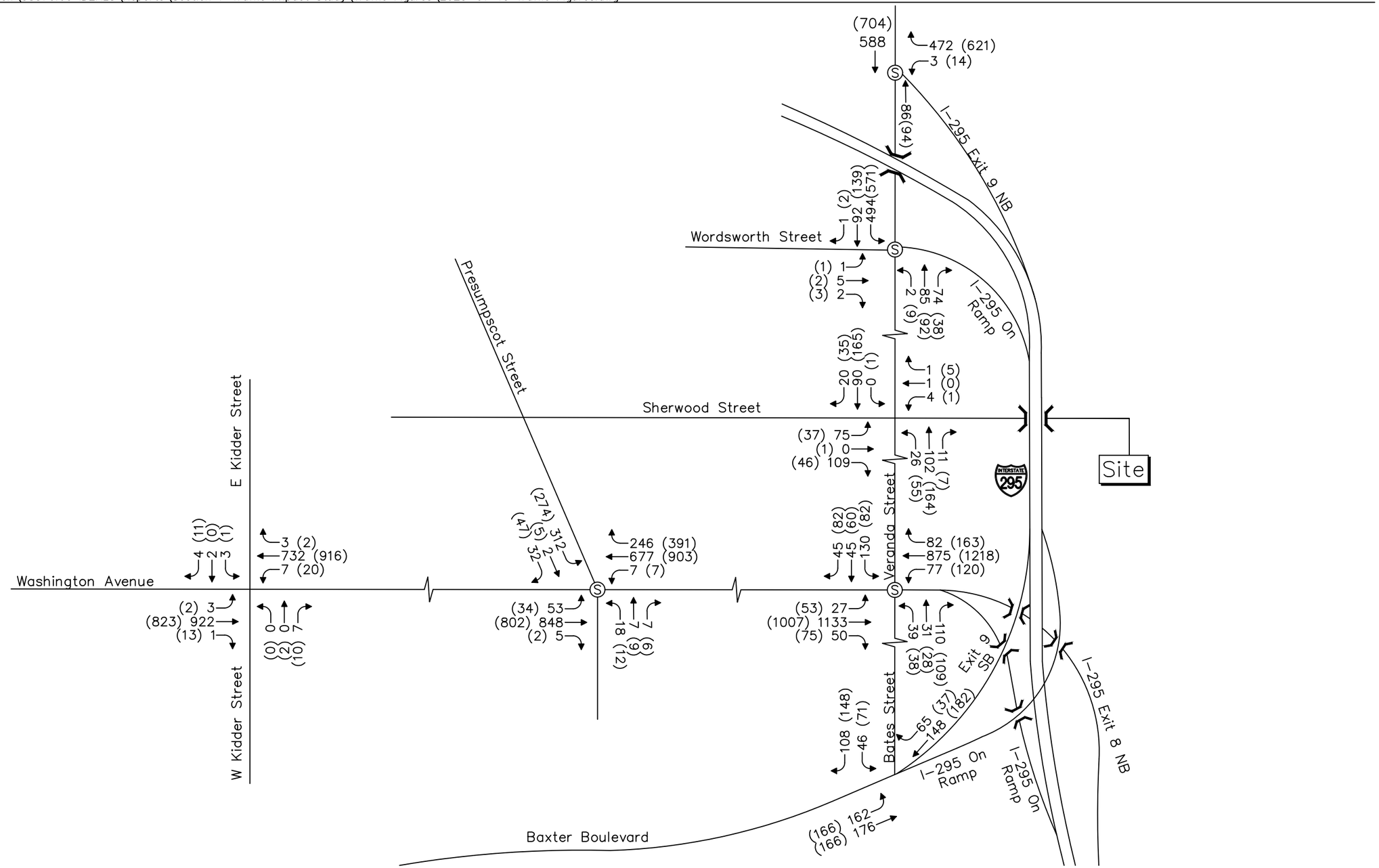
Land Use or User	Students (Day Users)		Students (Night Users)		Affiliated Users		Special Events (Day)		Special Events (Lunch)		Special Events (Night)		Day Care		General Office		Cafeteria	
ITE or Custom	Custom		Custom		Custom		Custom		Custom		Custom		ITE 565		ITE 710		ITE 932	
Time	Entering	Exiting	Entering	Exiting	Entering	Exiting	Entering	Exiting	Entering	Exiting	Entering	Exiting	Entering	Exiting	Entering	Exiting	Entering	Exiting
12:00 - 1:00 AM															0.2%	0.1%	0.4%	0.7%
1:00 - 2:00 AM															0.0%	0.1%	0.1%	0.3%
2:00 - 3:00 AM															0.0%	0.0%	0.3%	0.2%
3:00 - 4:00 AM															0.0%	0.1%	0.2%	0.4%
4:00 - 5:00 AM															0.2%	0.2%	0.2%	0.3%
5:00 - 6:00 AM													1.0%	0.2%	0.4%	0.1%	0.7%	0.2%
6:00 - 7:00 AM													6.3%	4.3%	4.8%	0.5%	1.7%	0.9%
7:00 - 8:00 AM	10.0%				10.0%		20.0%						19.5%	16.3%	13.6%	2.0%	2.7%	1.8%
8:00 - 9:00 AM	25.0%				20.0%		60.0%						13.2%	12.8%	14.3%	3.4%	3.4%	3.1%
9:00 - 10:00 AM	20.0%				40.0%		20.0%						5.4%	4.6%	6.3%	4.4%	4.0%	3.4%
10:00 - 11:00 AM	25.0%				20.0%								2.6%	2.9%	5.5%	6.0%	5.5%	4.4%
11:00 - 12:00 PM	20.0%				10.0%				80.0%				2.6%	2.6%	6.0%	10.3%	12.1%	6.9%
12:00 - 1:00 PM									20.0%				2.1%	2.6%	10.2%	10.1%	12.4%	12.3%
1:00 - 2:00 PM										20.0%			3.0%	3.2%	9.0%	6.6%	6.5%	11.2%
2:00 - 3:00 PM		10.0%								80.0%			4.1%	4.5%	8.3%	6.5%	4.0%	5.1%
3:00 - 4:00 PM		25.0%				10.0%							7.5%	6.9%	7.3%	8.4%	3.3%	4.0%
4:00 - 5:00 PM		30.0%	20.0%			20.0%		20.0%			10.0%		13.6%	14.0%	5.4%	15.2%	6.2%	3.9%
5:00 - 6:00 PM		30.0%	35.0%			40.0%		60.0%			50.0%		16.7%	18.7%	4.0%	15.8%	10.2%	6.8%
6:00 - 7:00 PM		5.0%	20.0%	15.0%		20.0%		20.0%			40.0%	20.0%	2.4%	6.4%	1.7%	2.6%	10.1%	8.7%
7:00 - 8:00 PM			10.0%	15.0%		10.0%						50.0%			0.9%	2.3%	7.2%	9.2%
8:00 - 9:00 PM			10.0%	15.0%								30.0%			0.7%	1.3%	4.3%	7.1%
9:00 - 10:00 PM			5.0%	35.0%											0.5%	1.6%	2.6%	4.8%
10:00 - 11:00 PM				20.0%											0.3%	2.1%	1.4%	2.9%
11:00 - 12:00 AM															0.4%	0.3%	0.5%	1.4%



Legend:
XX = AM Peak Hour
(XX) = PM Peak Hour

Not to Scale

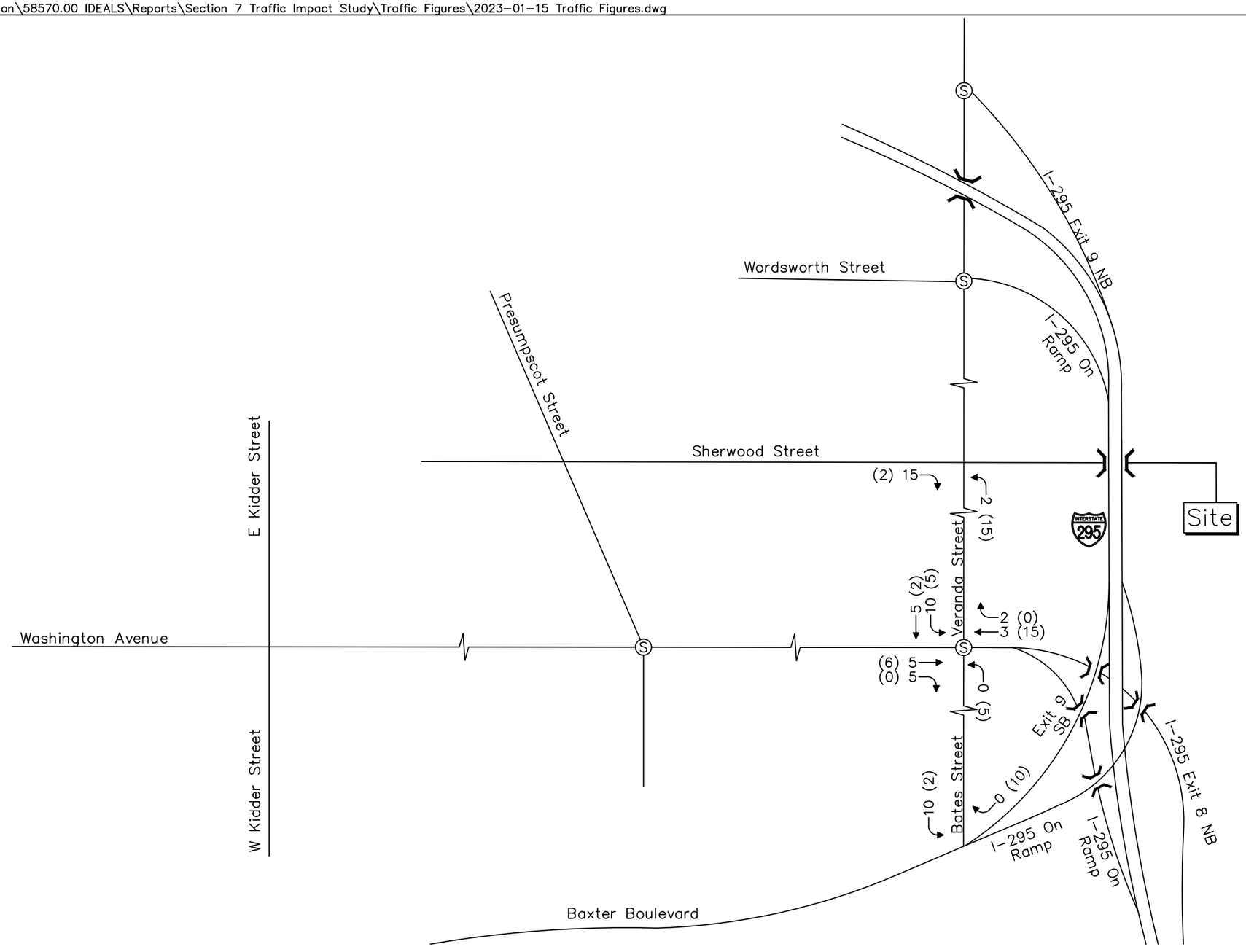
Figure 1
2023 Raw Volumes



Legend:
XX = AM Peak Hour
(XX) = PM Peak Hour

Not to Scale

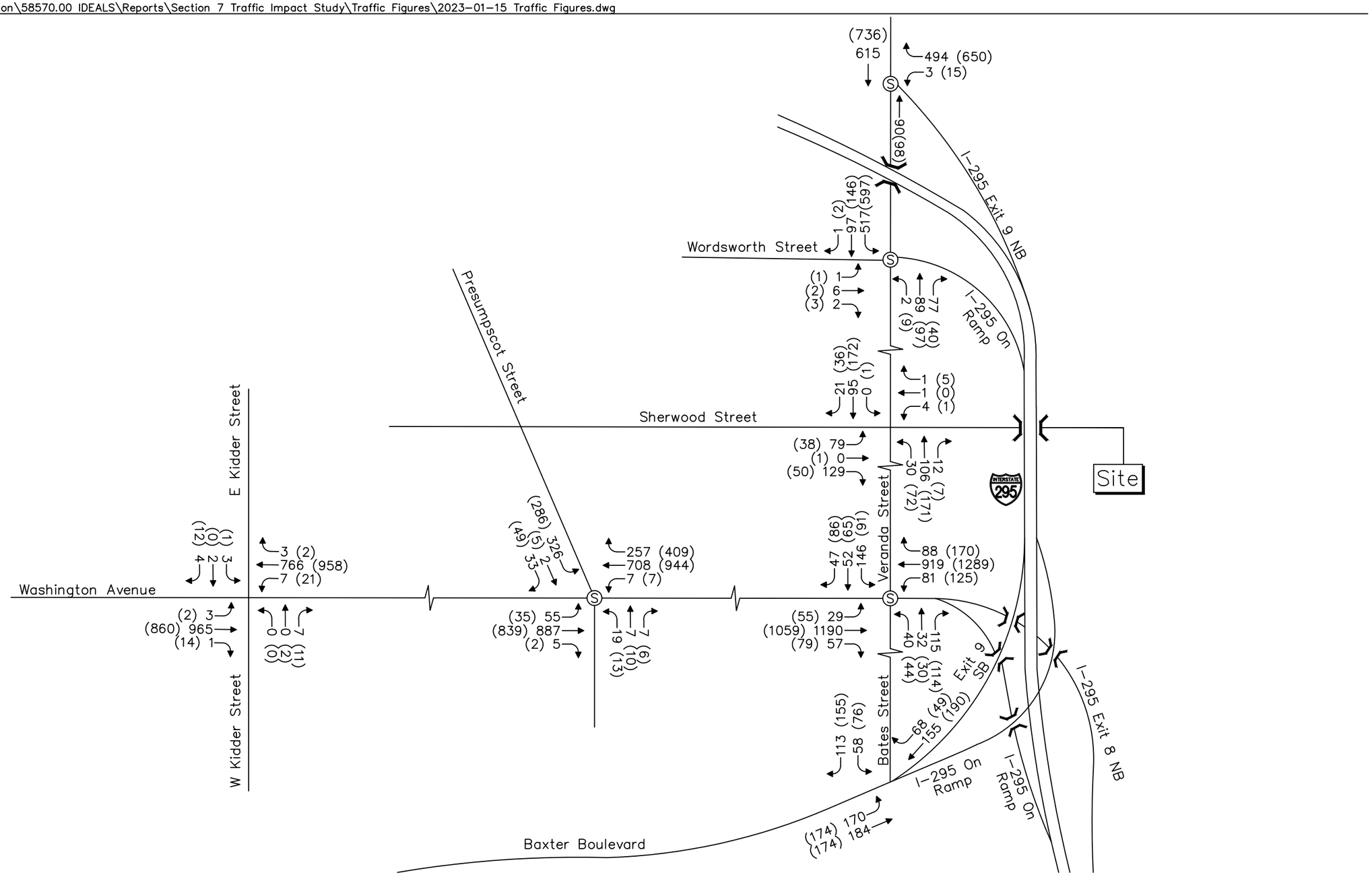
Figure 2
2024 Existing Conditions



Legend:
XX = AM Peak Hour
(XX) = PM Peak Hour

Not to Scale

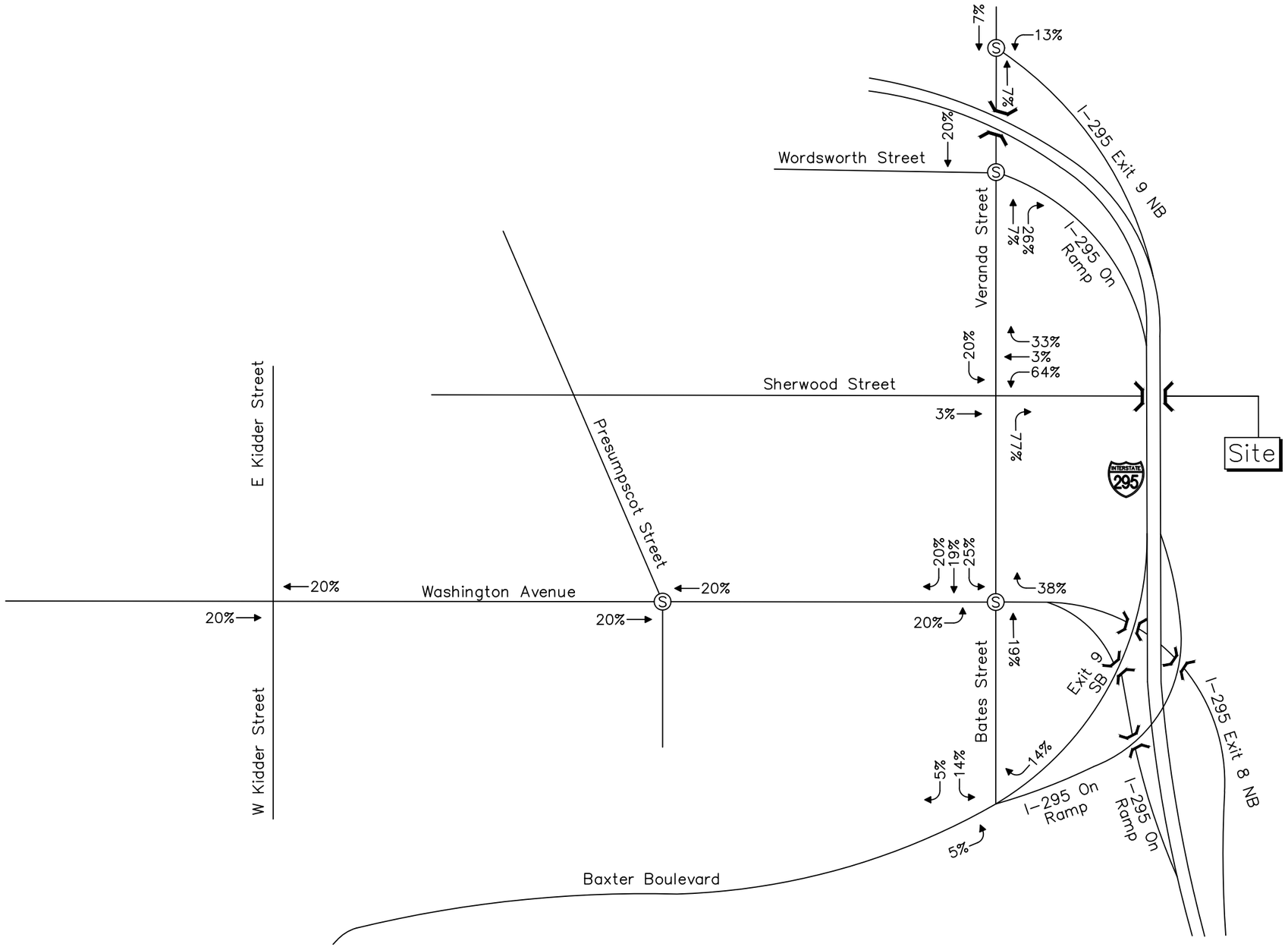
Figure 3
Other Developments



Legend:
XX = AM Peak Hour
(XX) = PM Peak Hour

Not to Scale

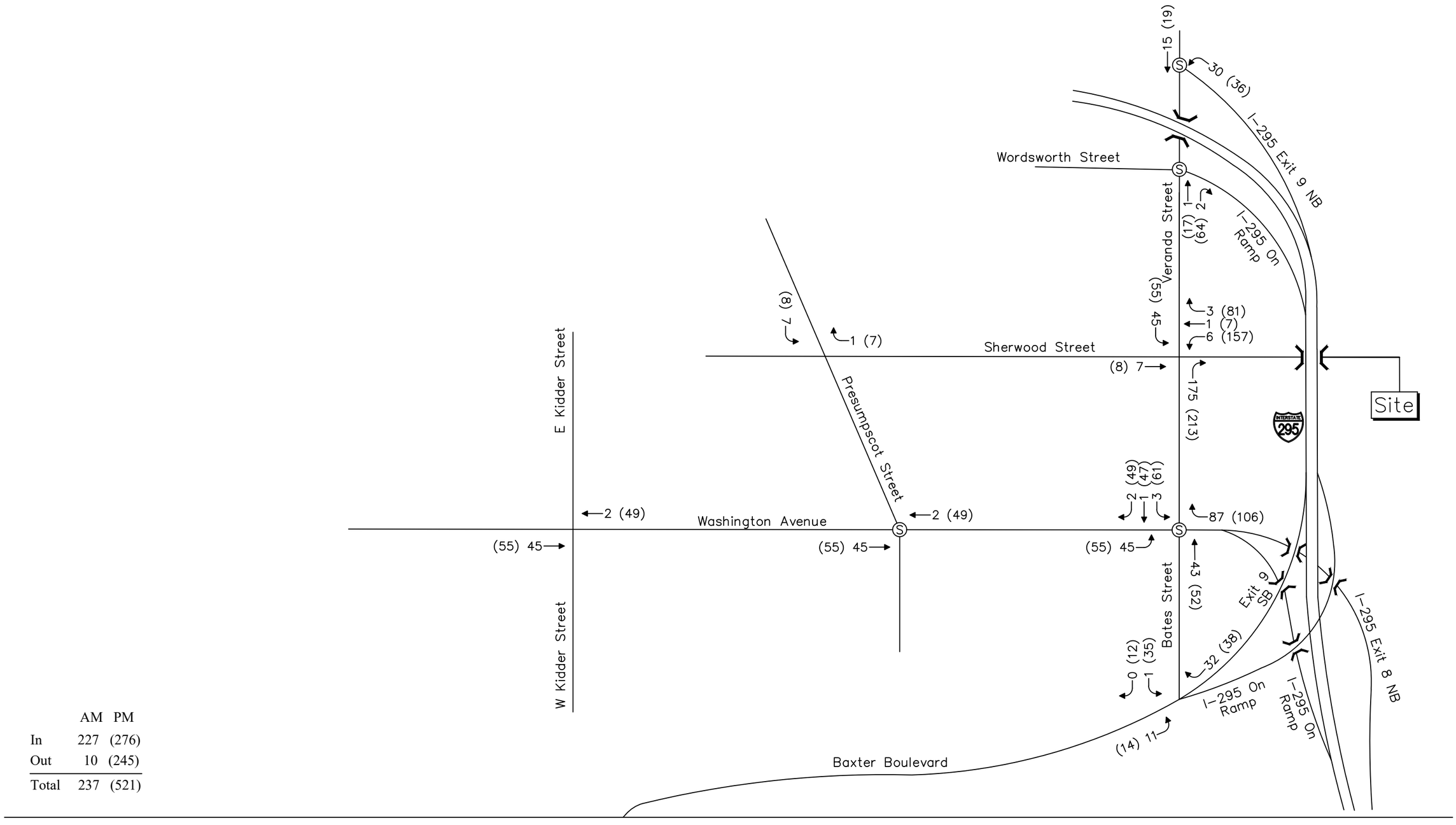
Figure 4
2032 No Build



Legend:
XX = AM Peak Hour
(XX) = PM Peak Hour

Not to Scale

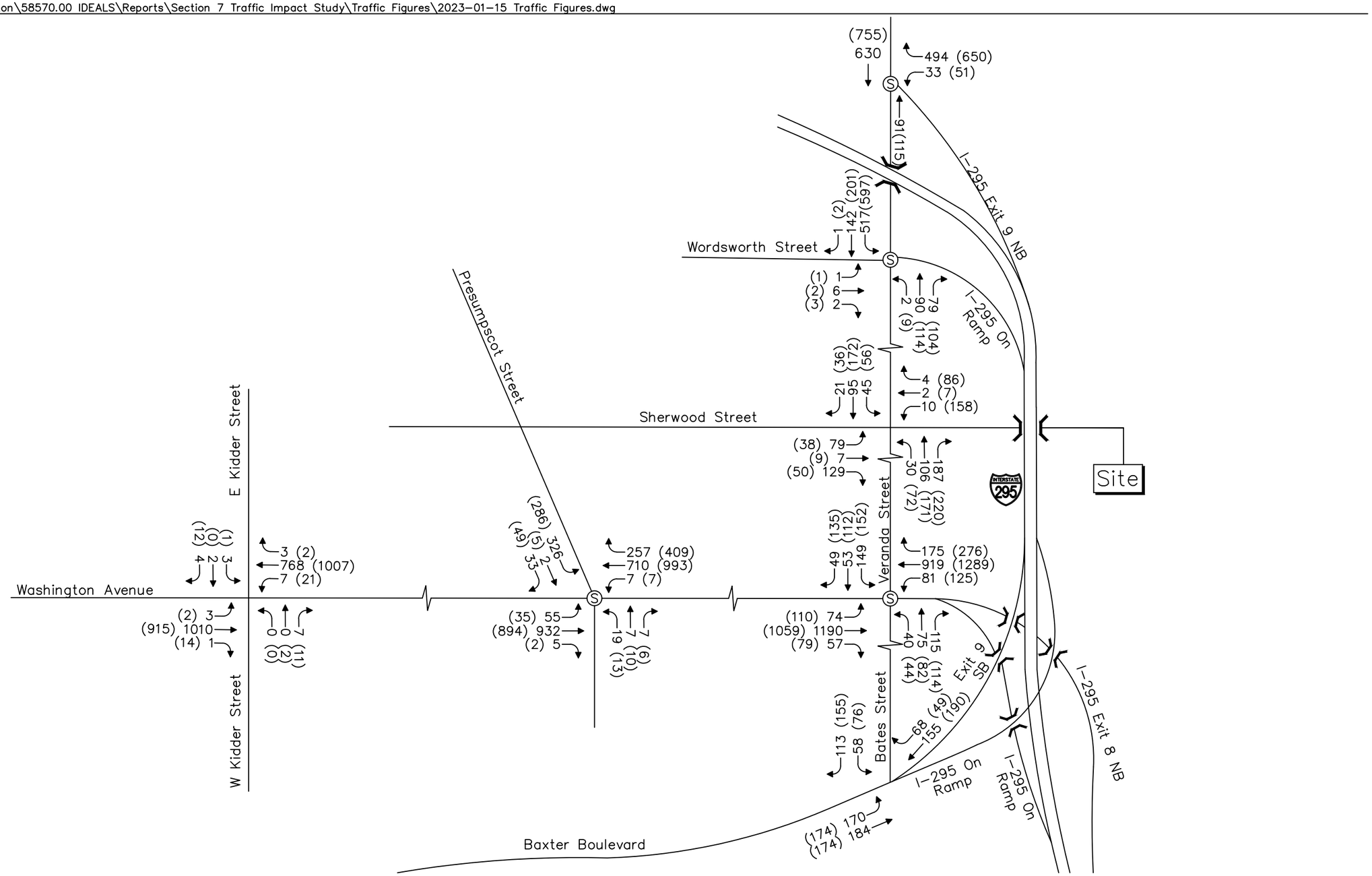
Figure 5
Trip Distribution



	AM	PM
In	227	(276)
Out	10	(245)
Total	237	(521)

Not to Scale

Figure 6
Trip Assignment



Legend:
XX = AM Peak Hour
(XX) = PM Peak Hour

Not to Scale

Figure 7
2032 Build


BIKE Total inbound = AM 10 /PM (15)
1(1)
1(1)
2(3)
2(3)
1(1)
4(5)
5(9)
10(15)
3(5)
2(4)
Note: assuming bikers take Presumpscot St to avoid Washington Ave since Sherwood St is less vehicle traffic and more comfortable (but slightly longer)
Presumpscot Elementary School
Winchester Woods Apartments
The People's Geek
Anania's Washington Ave/East Deering
Grateful Cup
Bottos Bakery
Veranda Thai Cuisine
Otherside Diner
Two Lights Settlement
Payson Park Playground
Portland Foreside
Maine Island Trail Association
Sherwood St
Veranda St
Pembroke St
Front St
Baxter Blvd
Trails
Dedicated lanes
Bicycle-friendly roads
Dirt/unpaved trails


BIKE Total outbound = AM 0 /PM (11)
0(1)
0(1)
0(2)
0(2)
0(4)
0(1)
0(6)
0(11)
0(3)
0(3)
Trails
Dedicated lanes
Bicycle-friendly roads
Dirt/unpaved trails
Winchester Woods Apartments
The People's Geek
Anania's Washington Ave/East Deering
The Grateful Cup
Bottos Bakery
Veranda Thai Cuisine
Otherside Diner
Two Lights Settlement
Portland Foreside
Maine Yacht Center
Maine Island Trail Association
Payson Park Playground
Arboretum
Sherwood St
Veranda St
Front St
Baxter Blvd
Pembroke St
Illsley St
Johansen St
Hanson St
Alton St
Washington Ave
Watson St
Kensington St
Lennox St
Berwick St
Dalton St
Hodgins St
Arcadia St
Winchester Dr
Randall St
295


PED Total inbound = AM 10 / PM (15)
2(3)
1(2)
2(3)
2(3)
1(1)
5(8)
1(2)
3(5)
4(6)
10(15)
1(1)
Sherwood St
Veranda St
Presumpscot Elementary School
Winchester Woods Apartments
Anania's Washington Ave/East Deering
Bottos Bakery
Otherside Diner
Two Lights Settlement
Portland Foreside
Maine Island Trail Association
Payson Park Playground
Baxter Blvd
Front St
Pembroke St
Trails
Dedicated lanes
Bicycle-friendly roads
Dirt/unpaved trails


PED Total outbound = AM 0/ PM (11)
0(2)
0(2)
0(1)
0(2)
0(5)
0(1)
0(2)
0(4)
0(5)
0(11)
0(1)
Trails
Dedicated lanes
Bicycle-friendly roads
Dirt/unpaved trails

Attachment 7D

Capacity Analysis Results

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	4254	4339	4506	4324	4320	4347
Vehs Exited	4252	4342	4500	4341	4307	4349
Starting Vehs	146	147	140	151	142	138
Ending Vehs	148	144	146	134	155	140
Denied Entry Before	0	0	5	4	1	2
Denied Entry After	0	0	0	0	0	0
Travel Distance (mi)	2775	2846	2916	2821	2792	2830
Travel Time (hr)	152.3	156.7	166.5	156.3	154.6	157.3
Total Delay (hr)	52.3	54.2	61.4	54.6	53.6	55.2
Total Stops	4261	4400	4822	4424	4406	4464
Fuel Used (gal)	103.5	106.0	110.2	105.4	104.2	105.8

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	4254	4339	4506	4324	4320	4347
Vehs Exited	4252	4342	4500	4341	4307	4349
Starting Vehs	146	147	140	151	142	138
Ending Vehs	148	144	146	134	155	140
Denied Entry Before	0	0	5	4	1	2
Denied Entry After	0	0	0	0	0	0
Travel Distance (mi)	2775	2846	2916	2821	2792	2830
Travel Time (hr)	152.3	156.7	166.5	156.3	154.6	157.3
Total Delay (hr)	52.3	54.2	61.4	54.6	53.6	55.2
Total Stops	4261	4400	4822	4424	4406	4464
Fuel Used (gal)	103.5	106.0	110.2	105.4	104.2	105.8

2: Sherwood St & Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.1
Total Del/Veh (s)	3.0	1.0	0.8	1.8	1.2	6.7	9.7	3.4	7.6	5.2	3.5
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

3: I-295 Exit Ramp Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.4	0.3	0.5	0.4
Total Del/Veh (s)	6.6	8.0	38.0	9.6	8.6
Denied Entry Before	0	1	0	0	1
Denied Entry After	0	0	0	0	0

4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda 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	0.0	0.3	0.5	0.0	0.1	0.3	0.0	0.0	0.0
Total Del/Veh (s)	48.3	18.1	23.0	52.8	42.8	20.0	61.8	30.2	20.8	29.9	17.9	18.0
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	26.1
Denied Entry Before	0
Denied Entry After	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.1	0.2	0.4	0.4	3.1	0.0	0.0	0.0	0.2	0.1	0.0
Total Del/Veh (s)	56.0	59.5	30.0	48.4	51.3	25.6	46.7	32.3	8.1	46.5	30.9	33.1
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	32.0
Denied Entry Before	0
Denied Entry After	0

6: Washington Ave & W Kidder Street/E Kidder Street Performance by movement

Movement	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.9	0.9	0.4	0.5
Total Del/Veh (s)	8.7	36.5	13.4	13.6	14.9	6.3	6.9	9.1	2.5	2.0	4.3
Denied Entry Before	0	0	0	0	0	0	0	0	1	0	1
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

10: Baxter Blvd/I-295 Ramps & Bates St Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	3.6	0.6	0.2	0.2	0.0	0.0	0.0	1.0
Total Del/Veh (s)	3.0	0.6	1.4	1.6	9.1	0.5	0.1	1.8
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

12: I-295 On Ramp/WORDSWORTH St & Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0			0.1	0.1	0.0
Total Del/Veh (s)	39.1	27.1	19.5	11.0	12.7			45.6	3.4	14.5
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

16: I-295 Exit Ramp Performance by movement

Movement	SET	SER	NWT	All
Denied Del/Veh (s)	0.0	0.0	0.3	0.1
Total Del/Veh (s)	3.2	4.3	2.4	3.5
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.7
Total Del/Veh (s)	43.6
Denied Entry Before	2
Denied Entry After	0

Intersection: 2: Sherwood St & Veranda St

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	36	44	89
Average Queue (ft)	3	5	48
95th Queue (ft)	19	26	75
Link Distance (ft)	425	1449	847
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: I-295 Exit Ramp

Movement	EB	WB	NB	NB
Directions Served	T	T	L	R
Maximum Queue (ft)	74	239	36	212
Average Queue (ft)	12	125	3	103
95th Queue (ft)	49	210	17	176
Link Distance (ft)	421	949	340	340
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	120	184	256	125	250	339	332	110	319	343
Average Queue (ft)	30	69	101	66	96	284	263	23	193	216
95th Queue (ft)	83	140	184	133	238	355	348	72	282	306
Link Distance (ft)		324	425			313	313		1016	1016
Upstream Blk Time (%)						4	2			
Queuing Penalty (veh)						22	10			
Storage Bay Dist (ft)	150			95	175			100		
Storage Blk Time (%)		1	19	4	0	27		0	20	
Queuing Penalty (veh)		0	17	5	0	21		0	5	

Intersection: 5: Washington Ave & Presumpscot St

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	T	R	L	TR
Maximum Queue (ft)	88	476	150	130	737	353	149	820
Average Queue (ft)	27	227	39	9	307	55	48	438
95th Queue (ft)	68	391	125	56	646	203	128	733
Link Distance (ft)	607	1387			1016	1016		1441
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			100	150			100	
Storage Blk Time (%)		39			25		1	31
Queuing Penalty (veh)		12			2		5	16

Intersection: 6: Washington Ave & W Kidder Street/E Kidder Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	39	39	368	146
Average Queue (ft)	8	8	25	7
95th Queue (ft)	30	30	182	80
Link Distance (ft)	945	1677	1441	1320
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Baxter Blvd/I-295 Ramps & Bates St

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	65	56	77
Average Queue (ft)	22	8	29
95th Queue (ft)	53	38	65
Link Distance (ft)		476	102
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)	175		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	187	321	30
Average Queue (ft)	91	158	5
95th Queue (ft)	162	306	20
Link Distance (ft)	1544	421	528
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: I-295 Exit Ramp

Movement	NW	NW
Directions Served	T	T
Maximum Queue (ft)	247	208
Average Queue (ft)	42	22
95th Queue (ft)	147	105
Link Distance (ft)	897	897
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 116

Intersection: 3: I-295 Exit Ramp

Phase	2	4	6
Movement(s) Served	EBT	NBL	WBT
Maximum Green (s)	59.0	19.0	59.0
Minimum Green (s)	5.0	5.0	5.0
Recall	C-Max	Max	C-Max
Avg. Green (s)	59.0	19.0	59.0
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	100	100	100
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	10.0	68.0	24.0	19.0	59.0	24.0
Minimum Green (s)	5.0	10.0	5.0	5.0	10.0	5.0
Recall	Max	C-Min	None	Max	C-Min	None
Avg. Green (s)	15.7	68.0	18.9	36.7	46.5	18.9
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	24	100	100	24
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 5: Washington Ave & Presumpscot St

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBTL	WBTL	EBTL	SBL	NBTL
Maximum Green (s)	4.0	53.0	25.0	14.0	4.0	53.0
Minimum Green (s)	4.0	10.0	5.0	4.0	4.0	10.0
Recall	None	C-Min	Min	None	None	C-Min
Avg. Green (s)	6.7	71.5	28.7	7.9	6.7	66.3
g/C Ratio	-0.01	NA	NA	-0.01	-0.01	NA
Cycles Skipped (%)	93	0	0	46	50	0
Cycles @ Minimum (%)	0	0	0	0	14	0
Cycles Maxed Out (%)	0	100	20	0	14	100
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Phase	2	4	6
Movement(s) Served	EBTL	SBTL	WBTL
Maximum Green (s)	19.0	19.0	34.0
Minimum Green (s)	5.0	5.0	5.0
Recall	None	None	C-Max
Avg. Green (s)	13.2	7.8	76.5
g/C Ratio	-0.01	-0.01	-0.01
Cycles Skipped (%)	13	92	11
Cycles @ Minimum (%)	3	0	0
Cycles Maxed Out (%)	0	0	89
Cycles with Peds (%)	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	4801	4933	4822	4806	4902	4852
Vehs Exited	4791	4902	4828	4823	4890	4846
Starting Vehs	136	148	159	163	145	149
Ending Vehs	146	179	153	146	157	154
Denied Entry Before	1	1	0	1	0	0
Denied Entry After	0	1	2	1	0	0
Travel Distance (mi)	3159	3195	3168	3122	3196	3168
Travel Time (hr)	172.1	173.4	176.6	167.7	177.7	173.5
Total Delay (hr)	61.0	60.9	65.1	58.0	65.3	62.0
Total Stops	4884	5093	5224	4849	5333	5074
Fuel Used (gal)	117.1	119.0	118.4	114.9	118.8	117.6

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	4801	4933	4822	4806	4902	4852
Vehs Exited	4791	4902	4828	4823	4890	4846
Starting Vehs	136	148	159	163	145	149
Ending Vehs	146	179	153	146	157	154
Denied Entry Before	1	1	0	1	0	0
Denied Entry After	0	1	2	1	0	0
Travel Distance (mi)	3159	3195	3168	3122	3196	3168
Travel Time (hr)	172.1	173.4	176.6	167.7	177.7	173.5
Total Delay (hr)	61.0	60.9	65.1	58.0	65.3	62.0
Total Stops	4884	5093	5224	4849	5333	5074
Fuel Used (gal)	117.1	119.0	118.4	114.9	118.8	117.6

2: Sherwood St & Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0		0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.0
Total Del/Veh (s)	4.2	1.3	0.9		1.4	1.0	6.8	3.3	7.7	4.3	4.6	2.4
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: I-295 Exit Ramp Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.6	0.2	0.6	0.5
Total Del/Veh (s)	4.2	10.2	22.1	14.8	11.9
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda 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	0.0	0.2	0.2	0.0	0.0	0.0	0.2	0.0	0.1
Total Del/Veh (s)	49.1	20.1	19.3	49.8	45.9	29.9	65.4	25.9	20.5	37.2	17.4	15.5
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	25.3
Denied Entry Before	0
Denied Entry After	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.4	0.3	2.9	0.0	0.0	0.0	0.3	0.0	0.0
Total Del/Veh (s)	64.4	48.5	21.3	48.3	47.8	29.8	43.7	38.6	9.8	41.4	22.3	19.0
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	30.0
Denied Entry Before	0
Denied Entry After	0

6: Washington Ave & W Kidder Street/E Kidder Street Performance by movement

Movement	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1		0.1	0.0	0.0	0.0	0.4	0.7	1.1	0.3
Total Del/Veh (s)	34.2	9.8		17.7	11.2	6.3	5.9	11.6	2.0	2.8	4.4
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

10: Baxter Blvd/I-295 Ramps & Bates St Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	3.6	0.6	0.2	0.2	0.0	0.0	0.0	0.9
Total Del/Veh (s)	4.2	0.6	0.4	0.2	10.6	0.6	0.0	2.0
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

12: I-295 On Ramp/WORDSWORTH St & Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.1	0.1	0.0
Total Del/Veh (s)	45.3	24.4	23.6	10.2	9.6	11.5		59.5	9.9	13.8
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

16: I-295 Exit Ramp Performance by movement

Movement	SET	SER	NWT	All
Denied Del/Veh (s)	0.0	0.0	0.4	0.2
Total Del/Veh (s)	2.2	3.9	5.0	4.5
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.6
Total Del/Veh (s)	44.0
Denied Entry Before	0
Denied Entry After	0

Intersection: 2: Sherwood St & Veranda St

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	63	31	74
Average Queue (ft)	16	6	35
95th Queue (ft)	50	27	59
Link Distance (ft)	425	1449	847
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: I-295 Exit Ramp

Movement	EB	WB	NB	NB
Directions Served	T	T	L	R
Maximum Queue (ft)	56	321	44	309
Average Queue (ft)	6	164	10	146
95th Queue (ft)	34	264	34	255
Link Distance (ft)	421	949	340	340
Upstream Blk Time (%)				0
Queuing Penalty (veh)				0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	99	163	201	125	250	343	344	124	281	299
Average Queue (ft)	27	65	74	77	143	307	300	52	176	194
95th Queue (ft)	70	124	159	133	280	349	353	117	255	278
Link Distance (ft)		324	425			313	313		1016	1016
Upstream Blk Time (%)						8	5			
Queuing Penalty (veh)						59	41			
Storage Bay Dist (ft)	150			95	175			100		
Storage Blk Time (%)		1	4	12	2	30		1	18	
Queuing Penalty (veh)		0	6	10	12	36		3	9	

Intersection: 5: Washington Ave & Presumpscot St

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	T	R	L	TR
Maximum Queue (ft)	80	413	150	99	861	592	149	622
Average Queue (ft)	21	199	58	8	442	125	26	299
95th Queue (ft)	57	330	152	48	831	417	88	542
Link Distance (ft)	607	1387			1016	1016		1441
Upstream Blk Time (%)					0			
Queuing Penalty (veh)					1			
Storage Bay Dist (ft)			100	150			100	
Storage Blk Time (%)		37	0		30		0	24
Queuing Penalty (veh)		18	1		2		2	8

Intersection: 6: Washington Ave & W Kidder Street/E Kidder Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	31	42	161	46
Average Queue (ft)	8	9	26	2
95th Queue (ft)	31	32	108	34
Link Distance (ft)	945	1677	1441	1320
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Baxter Blvd/I-295 Ramps & Bates St

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	61	15	47	77
Average Queue (ft)	22	1	3	34
95th Queue (ft)	54	8	23	63
Link Distance (ft)		818	476	102
Upstream Blk Time (%)				0
Queuing Penalty (veh)				0
Storage Bay Dist (ft)	175			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	181	371	26
Average Queue (ft)	91	166	5
95th Queue (ft)	154	313	20
Link Distance (ft)	1544	421	528
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: I-295 Exit Ramp

Movement	SE	NW	NW
Directions Served	R	T	T
Maximum Queue (ft)	15	282	292
Average Queue (ft)	0	92	73
95th Queue (ft)	10	227	215
Link Distance (ft)	313	897	897
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 208

Intersection: 3: I-295 Exit Ramp

Phase	2	4	6
Movement(s) Served	EBT	NBL	WBT
Maximum Green (s)	59.0	19.0	59.0
Minimum Green (s)	5.0	5.0	5.0
Recall	C-Max	Max	C-Max
Avg. Green (s)	59.0	19.0	59.0
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	100	100	100
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	10.0	68.0	24.0	19.0	59.0	24.0
Minimum Green (s)	5.0	10.0	5.0	5.0	10.0	5.0
Recall	Max	C-Min	None	Max	C-Min	None
Avg. Green (s)	16.6	68.0	17.4	24.7	59.7	17.4
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	13	100	100	13
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 5: Washington Ave & Presumpscot St

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBTL	WBTL	EBTL	SBL	NBTL
Maximum Green (s)	4.0	53.0	25.0	14.0	4.0	53.0
Minimum Green (s)	4.0	10.0	5.0	4.0	4.0	10.0
Recall	None	C-Min	Min	None	None	C-Min
Avg. Green (s)	5.9	75.6	26.1	7.8	7.1	73.1
g/C Ratio	-0.01	NA	NA	-0.01	-0.01	NA
Cycles Skipped (%)	89	0	0	57	71	0
Cycles @ Minimum (%)	4	0	0	0	7	0
Cycles Maxed Out (%)	4	100	13	0	7	100
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Phase	2	4	6
Movement(s) Served	EBTL	SBTL	WBTL
Maximum Green (s)	19.0	19.0	34.0
Minimum Green (s)	5.0	5.0	5.0
Recall	None	None	C-Max
Avg. Green (s)	12.1	6.4	73.6
g/C Ratio	-0.01	-0.01	-0.01
Cycles Skipped (%)	10	92	8
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	0	0	92
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	4465	4481	4554	4654	4469	4521
Vehs Exited	4466	4460	4557	4600	4457	4511
Starting Vehs	159	129	165	139	141	145
Ending Vehs	158	150	162	193	153	159
Denied Entry Before	0	3	0	2	1	1
Denied Entry After	1	1	2	0	0	0
Travel Distance (mi)	2919	2879	2990	3023	2912	2945
Travel Time (hr)	164.0	161.6	171.2	171.6	164.8	166.7
Total Delay (hr)	59.2	58.3	63.6	62.8	59.8	60.7
Total Stops	4883	4724	5030	5017	4746	4882
Fuel Used (gal)	109.4	108.4	113.2	114.4	109.6	111.0

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	4465	4481	4554	4654	4469	4521
Vehs Exited	4466	4460	4557	4600	4457	4511
Starting Vehs	159	129	165	139	141	145
Ending Vehs	158	150	162	193	153	159
Denied Entry Before	0	3	0	2	1	1
Denied Entry After	1	1	2	0	0	0
Travel Distance (mi)	2919	2879	2990	3023	2912	2945
Travel Time (hr)	164.0	161.6	171.2	171.6	164.8	166.7
Total Delay (hr)	59.2	58.3	63.6	62.8	59.8	60.7
Total Stops	4883	4724	5030	5017	4746	4882
Fuel Used (gal)	109.4	108.4	113.2	114.4	109.6	111.0

2: Sherwood St & Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.1
Total Del/Veh (s)	3.5	1.4	0.9	2.0	1.2	7.1	7.6	4.1	7.3	5.1	3.7
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

3: I-295 Exit Ramp Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.5	0.3	0.5	0.4
Total Del/Veh (s)	8.6	8.8	39.5	9.6	9.2
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda 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	0.0	0.3	0.4	0.0	0.1	0.1	0.1	0.0	0.0
Total Del/Veh (s)	50.4	17.5	23.6	53.9	44.9	22.2	64.5	29.9	23.0	33.1	16.2	15.5
Denied Entry Before	0	0	0	0	0	0	0	1	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	25.6
Denied Entry Before	1
Denied Entry After	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.4	0.2	2.8	0.0	0.0	0.0	2.8	0.3	0.0
Total Del/Veh (s)	57.0	53.1	13.1	48.1	48.3	27.2	48.2	35.0	8.3	55.8	37.1	29.3
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	35.3
Denied Entry Before	0
Denied Entry After	0

6: Washington Ave & W Kidder Street/E Kidder Street Performance by movement

Movement	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.0	0.0	0.0	1.5	0.9	1.0	0.5
Total Del/Veh (s)	6.0	59.1	27.8	7.9	13.3	6.0	6.0	10.8	2.3	2.9	4.1
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

10: Baxter Blvd/I-295 Ramps & Bates St Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	3.6	0.6	0.2	0.2	0.0	0.0	0.0	1.0
Total Del/Veh (s)	3.4	0.7	1.7	1.6	10.7	0.7	0.1	2.2
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

12: I-295 On Ramp/WORDSWORTH St & Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.1	0.1	0.0
Total Del/Veh (s)	43.7	29.4	20.8	13.2	13.8	3.3		58.6	10.4	16.7
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

16: I-295 Exit Ramp Performance by movement

Movement	SET	SER	NWT	All
Denied Del/Veh (s)	0.0	0.0	0.3	0.1
Total Del/Veh (s)	3.1	4.9	2.7	3.9
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.8
Total Del/Veh (s)	46.1
Denied Entry Before	1
Denied Entry After	0

Intersection: 2: Sherwood St & Veranda St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	66	2	44	82
Average Queue (ft)	7	0	6	49
95th Queue (ft)	34	1	28	76
Link Distance (ft)	425	1544	1449	847
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: I-295 Exit Ramp

Movement	EB	WB	NB	NB
Directions Served	T	T	L	R
Maximum Queue (ft)	109	248	31	241
Average Queue (ft)	22	137	3	103
95th Queue (ft)	82	229	17	182
Link Distance (ft)	421	949	340	340
Upstream Blk Time (%)				0
Queuing Penalty (veh)				0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	118	198	246	125	250	341	338	124	313	333
Average Queue (ft)	35	76	113	77	114	299	282	27	200	221
95th Queue (ft)	83	147	208	142	264	356	350	89	297	323
Link Distance (ft)		324	425			313	313		1016	1016
Upstream Blk Time (%)						5	2			
Queuing Penalty (veh)						25	12			
Storage Bay Dist (ft)	150			95	175			100		
Storage Blk Time (%)		2	21	4	0	29		0	19	
Queuing Penalty (veh)		1	21	6	2	24		0	6	

Intersection: 5: Washington Ave & Presumpscot St

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	T	R	L	TR
Maximum Queue (ft)	86	475	150	98	829	569	150	1004
Average Queue (ft)	33	231	44	6	349	79	43	498
95th Queue (ft)	72	387	138	46	691	311	128	923
Link Distance (ft)	607	1387			1016	1016		1441
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			100	150			100	
Storage Blk Time (%)		42	0		27		1	32
Queuing Penalty (veh)		14	1		2		7	18

Intersection: 6: Washington Ave & W Kidder Street/E Kidder Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	30	33	253	38
Average Queue (ft)	7	8	19	2
95th Queue (ft)	26	29	116	29
Link Distance (ft)	945	1677	1441	1320
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Baxter Blvd/I-295 Ramps & Bates St

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	73	10	84	90
Average Queue (ft)	24	0	13	34
95th Queue (ft)	59	7	49	71
Link Distance (ft)		818	476	102
Upstream Blk Time (%)				0
Queuing Penalty (veh)				0
Storage Bay Dist (ft)	175			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	201	364	47
Average Queue (ft)	99	180	8
95th Queue (ft)	170	329	29
Link Distance (ft)	1544	421	528
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: I-295 Exit Ramp

Movement	SE	NW	NW
Directions Served	R	T	T
Maximum Queue (ft)	22	231	204
Average Queue (ft)	1	45	21
95th Queue (ft)	11	153	107
Link Distance (ft)	313	897	897
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 138

Intersection: 3: I-295 Exit Ramp

Phase	2	4	6
Movement(s) Served	EBT	NBL	WBT
Maximum Green (s)	59.0	19.0	59.0
Minimum Green (s)	5.0	5.0	5.0
Recall	C-Max	Max	C-Max
Avg. Green (s)	59.0	19.0	59.0
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	100	100	100
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	10.0	68.0	24.0	19.0	59.0	24.0
Minimum Green (s)	5.0	10.0	5.0	5.0	10.0	5.0
Recall	Max	C-Min	None	Max	C-Min	None
Avg. Green (s)	14.3	68.0	19.8	34.5	47.5	19.8
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	33	100	100	33
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 5: Washington Ave & Presumpscot St

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBTL	WBTL	EBTL	SBL	NBTL
Maximum Green (s)	4.0	53.0	25.0	14.0	4.0	53.0
Minimum Green (s)	4.0	10.0	5.0	4.0	4.0	10.0
Recall	None	C-Min	Min	None	None	C-Min
Avg. Green (s)	6.8	70.9	28.8	8.0	6.3	66.6
g/C Ratio	-0.01	NA	NA	-0.01	-0.01	NA
Cycles Skipped (%)	93	0	0	39	55	0
Cycles @ Minimum (%)	0	0	0	0	14	0
Cycles Maxed Out (%)	0	100	23	0	14	100
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Phase	2	4	6
Movement(s) Served	EBTL	SBTL	WBTL
Maximum Green (s)	19.0	19.0	34.0
Minimum Green (s)	5.0	5.0	5.0
Recall	None	None	C-Max
Avg. Green (s)	12.9	6.9	70.8
g/C Ratio	-0.01	-0.01	-0.01
Cycles Skipped (%)	10	82	5
Cycles @ Minimum (%)	3	0	0
Cycles Maxed Out (%)	0	0	95
Cycles with Peds (%)	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5071	5031	4966	4974	5148	5039
Vehs Exited	5050	5009	4939	4955	5153	5022
Starting Vehs	181	154	157	161	179	162
Ending Vehs	202	176	184	180	174	176
Denied Entry Before	1	0	1	0	0	0
Denied Entry After	4	3	0	0	1	0
Travel Distance (mi)	3286	3248	3212	3251	3373	3274
Travel Time (hr)	189.2	183.9	175.0	185.8	192.3	185.3
Total Delay (hr)	73.7	69.7	62.4	71.6	73.5	70.2
Total Stops	5849	5544	5052	5609	5902	5591
Fuel Used (gal)	124.7	122.9	119.0	123.4	127.5	123.5

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	5071	5031	4966	4974	5148	5039
Vehs Exited	5050	5009	4939	4955	5153	5022
Starting Vehs	181	154	157	161	179	162
Ending Vehs	202	176	184	180	174	176
Denied Entry Before	1	0	1	0	0	0
Denied Entry After	4	3	0	0	1	0
Travel Distance (mi)	3286	3248	3212	3251	3373	3274
Travel Time (hr)	189.2	183.9	175.0	185.8	192.3	185.3
Total Delay (hr)	73.7	69.7	62.4	71.6	73.5	70.2
Total Stops	5849	5544	5052	5609	5902	5591
Fuel Used (gal)	124.7	122.9	119.0	123.4	127.5	123.5

2: Sherwood St & Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.1		0.1	0.1	0.1	0.1	0.0
Total Del/Veh (s)	4.4	1.5	1.7	4.0	1.4	1.3		3.7	8.4	14.7	4.5	2.6
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: I-295 Exit Ramp Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.6	0.3	0.6	0.6
Total Del/Veh (s)	4.4	10.9	25.3	15.6	12.7
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda 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	0.0	0.2	0.4	0.0	0.0	0.1	0.3	0.0	0.0
Total Del/Veh (s)	55.0	18.6	20.8	51.3	43.8	26.9	72.1	28.4	22.7	40.1	15.6	13.0
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	26.1
Denied Entry Before	0
Denied Entry After	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.4	0.4	3.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Del/Veh (s)	57.6	54.4	14.3	47.4	58.1	31.8	69.2	43.9	10.2	52.0	22.2	6.3
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	32.4
Denied Entry Before	0
Denied Entry After	0

6: Washington Ave & W Kidder Street/E Kidder Street Performance by movement

Movement	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1		0.1	0.0	0.0	2.5	1.0	0.8	0.8	0.4
Total Del/Veh (s)	39.3	9.2		20.7	12.8	7.2	4.3	11.0	2.0	1.8	5.0
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

10: Baxter Blvd/I-295 Ramps & Bates St Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	3.6	0.6	0.2	0.2	0.0	0.0	0.0	0.9
Total Del/Veh (s)	4.0	0.6	0.4	0.2	11.4	0.8	0.0	2.1
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

12: I-295 On Ramp/WORDSWORTH St & Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0
Total Del/Veh (s)	37.4	24.9	25.6	9.7	9.9	10.7	44.9	29.0	6.1	13.3
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

16: I-295 Exit Ramp Performance by movement

Movement	SET	SER	NWT	All
Denied Del/Veh (s)	0.0	0.0	0.4	0.3
Total Del/Veh (s)	2.2	4.6	10.2	7.7
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.7
Total Del/Veh (s)	47.9
Denied Entry Before	0
Denied Entry After	0

Intersection: 2: Sherwood St & Veranda St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	76	3	31	73
Average Queue (ft)	20	0	5	35
95th Queue (ft)	62	3	23	57
Link Distance (ft)	425	1544	1449	847
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: I-295 Exit Ramp

Movement	EB	WB	NB	NB
Directions Served	T	T	L	R
Maximum Queue (ft)	79	354	112	330
Average Queue (ft)	7	172	16	157
95th Queue (ft)	42	292	86	284
Link Distance (ft)	421	949	340	340
Upstream Blk Time (%)			0	1
Queuing Penalty (veh)			0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	113	169	204	125	250	344	348	125	287	330
Average Queue (ft)	37	67	79	78	147	313	303	49	176	201
95th Queue (ft)	88	127	164	136	288	358	368	114	266	293
Link Distance (ft)		324	425			313	313		1016	1016
Upstream Blk Time (%)						14	11			
Queuing Penalty (veh)						112	86			
Storage Bay Dist (ft)	150			95	175			100		
Storage Blk Time (%)	0	1	7	9	3	34		1	17	
Queuing Penalty (veh)	0	0	11	8	18	43		6	9	

Intersection: 5: Washington Ave & Presumpscot St

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	T	R	L	TR
Maximum Queue (ft)	70	380	150	95	1025	914	148	618
Average Queue (ft)	25	201	51	7	532	176	28	331
95th Queue (ft)	59	338	139	61	912	577	93	563
Link Distance (ft)	607	1387			1016	1016		1441
Upstream Blk Time (%)					0	0		
Queuing Penalty (veh)					2	0		
Storage Bay Dist (ft)			100	150			100	
Storage Blk Time (%)		38	1		34		0	26
Queuing Penalty (veh)		18	2		2		1	9

Intersection: 6: Washington Ave & W Kidder Street/E Kidder Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	35	42	406	49
Average Queue (ft)	11	11	38	2
95th Queue (ft)	35	36	191	22
Link Distance (ft)	945	1677	1441	1320
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Baxter Blvd/I-295 Ramps & Bates St

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	58	28	86
Average Queue (ft)	19	2	36
95th Queue (ft)	48	14	66
Link Distance (ft)		476	102
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)	175		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	162	389	26
Average Queue (ft)	85	174	4
95th Queue (ft)	143	345	17
Link Distance (ft)	1544	421	528
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: I-295 Exit Ramp

Movement	NW	NW
Directions Served	T	T
Maximum Queue (ft)	487	457
Average Queue (ft)	168	129
95th Queue (ft)	385	348
Link Distance (ft)	897	897
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 329

Intersection: 3: I-295 Exit Ramp

Phase	2	4	6
Movement(s) Served	EBT	NBL	WBT
Maximum Green (s)	59.0	19.0	59.0
Minimum Green (s)	5.0	5.0	5.0
Recall	C-Max	Max	C-Max
Avg. Green (s)	59.0	19.0	59.0
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	100	100	100
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	10.0	68.0	24.0	19.0	59.0	24.0
Minimum Green (s)	5.0	10.0	5.0	5.0	10.0	5.0
Recall	Max	C-Min	None	Max	C-Min	None
Avg. Green (s)	16.0	68.0	18.0	22.6	61.2	18.0
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	20	100	100	20
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 5: Washington Ave & Presumpscot St

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBTL	WBTL	EBTL	SBL	NBTL
Maximum Green (s)	4.0	53.0	25.0	14.0	4.0	53.0
Minimum Green (s)	4.0	10.0	5.0	4.0	4.0	10.0
Recall	None	C-Min	Min	None	None	C-Min
Avg. Green (s)	8.1	75.0	26.6	7.5	6.4	71.6
g/C Ratio	-0.01	NA	NA	-0.01	-0.01	NA
Cycles Skipped (%)	96	0	0	48	68	0
Cycles @ Minimum (%)	0	0	0	0	11	0
Cycles Maxed Out (%)	0	100	23	0	14	100
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Phase	2	4	6
Movement(s) Served	EBTL	SBTL	WBTL
Maximum Green (s)	19.0	19.0	34.0
Minimum Green (s)	5.0	5.0	5.0
Recall	None	None	C-Max
Avg. Green (s)	11.0	7.2	77.9
g/C Ratio	-0.01	-0.01	-0.01
Cycles Skipped (%)	10	95	11
Cycles @ Minimum (%)	3	0	0
Cycles Maxed Out (%)	0	0	89
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	4670	4825	4878	4759	4699	4770
Vehs Exited	4659	4835	4891	4699	4679	4754
Starting Vehs	155	164	157	125	159	148
Ending Vehs	166	154	144	185	179	164
Denied Entry Before	1	1	1	0	0	0
Denied Entry After	0	1	0	1	1	0
Travel Distance (mi)	3079	3165	3192	3092	3089	3123
Travel Time (hr)	173.0	196.9	188.2	173.6	171.6	180.7
Total Delay (hr)	61.9	82.7	73.0	61.9	60.1	67.9
Total Stops	5014	6126	5311	4946	5021	5289
Fuel Used (gal)	116.0	124.0	122.6	116.0	116.4	119.0

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	4670	4825	4878	4759	4699	4770
Vehs Exited	4659	4835	4891	4699	4679	4754
Starting Vehs	155	164	157	125	159	148
Ending Vehs	166	154	144	185	179	164
Denied Entry Before	1	1	1	0	0	0
Denied Entry After	0	1	0	1	1	0
Travel Distance (mi)	3079	3165	3192	3092	3089	3123
Travel Time (hr)	173.0	196.9	188.2	173.6	171.6	180.7
Total Delay (hr)	61.9	82.7	73.0	61.9	60.1	67.9
Total Stops	5014	6126	5311	4946	5021	5289
Fuel Used (gal)	116.0	124.0	122.6	116.0	116.4	119.0

2: Sherwood St & Veranda 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	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.2
Total Del/Veh (s)	3.6	2.3	1.4	5.7	4.1	2.6	9.3	12.1	2.9	11.0	15.5	9.2
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

2: Sherwood St & Veranda St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	4.9
Denied Entry Before	0
Denied Entry After	0

3: I-295 Exit Ramp Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.5	0.1	0.5	0.4
Total Del/Veh (s)	9.7	9.5	27.7	9.6	10.0
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda 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	6.0	4.0	2.1	0.0	0.2	0.1	0.2	0.0	0.0
Total Del/Veh (s)	46.5	42.8	28.7	75.3	56.0	31.7	64.3	28.4	22.7	31.3	15.3	13.0
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St Performance by movement

Movement	All
Denied Del/Veh (s)	0.5
Total Del/Veh (s)	26.9
Denied Entry Before	0
Denied Entry After	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.4	0.2	2.7	0.0	0.0	0.0	4.6	1.0	0.0
Total Del/Veh (s)	52.3	82.4	19.3	47.2	51.0	26.7	42.5	31.0	6.9	64.0	45.3	46.2
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	37.2
Denied Entry Before	0
Denied Entry After	0

6: Washington Ave & W Kidder Street/E Kidder Street Performance by movement

Movement	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.3	0.1	0.0	0.2	1.1	0.8	0.6
Total Del/Veh (s)	8.3	38.4	42.3	11.9	14.2	6.5	6.1	15.7	5.2	2.0	6.0
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

10: Baxter Blvd/I-295 Ramps & Bates St Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	3.6	0.6	0.2	0.2	0.0	0.0	0.0	1.0
Total Del/Veh (s)	3.3	0.6	1.5	1.7	10.4	1.5	0.1	2.2
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

12: I-295 On Ramp/WORDSWORTH St & Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0
Total Del/Veh (s)	55.3	28.4	22.9	13.8	14.5	18.1	26.5	49.2	7.4	17.1
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

16: I-295 Exit Ramp Performance by movement

Movement	SET	SER	NWT	All
Denied Del/Veh (s)	0.0	0.0	0.3	0.1
Total Del/Veh (s)	3.3	4.7	3.1	4.0
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	1.2
Total Del/Veh (s)	48.5
Denied Entry Before	0
Denied Entry After	0

Intersection: 2: Sherwood St & Veranda St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	46	63	61	132
Average Queue (ft)	7	15	18	56
95th Queue (ft)	31	47	51	115
Link Distance (ft)	425	1544	1449	847
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: I-295 Exit Ramp

Movement	EB	WB	NB	NB
Directions Served	T	T	L	R
Maximum Queue (ft)	128	298	81	219
Average Queue (ft)	24	146	25	109
95th Queue (ft)	89	249	61	180
Link Distance (ft)	421	949	340	340
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	174	255	306	125	250	341	339	124	332	354
Average Queue (ft)	38	110	148	85	103	296	280	52	192	211
95th Queue (ft)	105	208	311	155	236	355	348	115	286	308
Link Distance (ft)		324	425			313	313		1016	1016
Upstream Blk Time (%)		0	3			5	3			
Queuing Penalty (veh)		0	6			31	20			
Storage Bay Dist (ft)	150			95	175			100		
Storage Blk Time (%)	0	6	31	6	0	28		2	18	
Queuing Penalty (veh)	0	2	32	9	0	22		10	13	

Intersection: 5: Washington Ave & Presumpscot St

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	T	R	L	TR
Maximum Queue (ft)	95	438	150	96	659	327	149	1092
Average Queue (ft)	32	233	37	7	314	53	44	608
95th Queue (ft)	72	381	119	48	618	171	125	1127
Link Distance (ft)	607	1387			1016	1016		1441
Upstream Blk Time (%)								0
Queuing Penalty (veh)								4
Storage Bay Dist (ft)			100	150			100	
Storage Blk Time (%)		42	0		26		1	34
Queuing Penalty (veh)		14	1		2		6	19

Intersection: 6: Washington Ave & W Kidder Street/E Kidder Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	30	42	313	212
Average Queue (ft)	6	11	31	32
95th Queue (ft)	25	35	168	257
Link Distance (ft)	945	1677	1441	1320
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Baxter Blvd/I-295 Ramps & Bates St

Movement	EB	WB	SB	B8
Directions Served	L	TR	LR	T
Maximum Queue (ft)	70	57	109	3
Average Queue (ft)	26	9	37	0
95th Queue (ft)	61	37	75	2
Link Distance (ft)		476	102	324
Upstream Blk Time (%)			1	
Queuing Penalty (veh)			1	
Storage Bay Dist (ft)	175			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	218	400	30
Average Queue (ft)	95	196	8
95th Queue (ft)	171	364	25
Link Distance (ft)	1544	421	528
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		2	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: I-295 Exit Ramp

Movement	NW	NW
Directions Served	T	T
Maximum Queue (ft)	244	217
Average Queue (ft)	48	32
95th Queue (ft)	157	131
Link Distance (ft)	897	897
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 194

Intersection: 3: I-295 Exit Ramp

Phase	2	4	6
Movement(s) Served	EBT	NBL	WBT
Maximum Green (s)	59.0	19.0	59.0
Minimum Green (s)	5.0	5.0	5.0
Recall	C-Max	Max	C-Max
Avg. Green (s)	59.0	19.0	59.0
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	100	100	100
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	10.0	68.0	24.0	19.0	59.0	24.0
Minimum Green (s)	5.0	10.0	5.0	5.0	10.0	5.0
Recall	Max	C-Min	None	Max	C-Min	None
Avg. Green (s)	12.2	68.0	21.7	28.7	51.2	21.7
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	100	60	100	100	60
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 5: Washington Ave & Presumpscot St

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBTL	WBTL	EBTL	SBL	NBTL
Maximum Green (s)	4.0	53.0	25.0	14.0	4.0	53.0
Minimum Green (s)	4.0	10.0	5.0	4.0	4.0	10.0
Recall	None	C-Min	Min	None	None	C-Min
Avg. Green (s)	7.1	71.2	29.3	7.9	6.6	66.2
g/C Ratio	-0.01	NA	NA	-0.01	-0.01	NA
Cycles Skipped (%)	93	0	0	48	52	0
Cycles @ Minimum (%)	4	0	0	0	14	0
Cycles Maxed Out (%)	4	100	23	0	17	100
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Phase	2	4	6
Movement(s) Served	EBTL	SBTL	WBTL
Maximum Green (s)	19.0	19.0	34.0
Minimum Green (s)	5.0	5.0	5.0
Recall	None	None	C-Max
Avg. Green (s)	13.8	6.3	71.5
g/C Ratio	-0.01	-0.01	-0.01
Cycles Skipped (%)	10	79	10
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	0	0	90
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5523	5668	5515	5449	5600	5550
Vehs Exited	5427	5569	5516	5426	5494	5486
Starting Vehs	186	190	196	194	186	187
Ending Vehs	282	289	195	217	292	249
Denied Entry Before	0	0	0	2	0	0
Denied Entry After	54	44	1	0	99	38
Travel Distance (mi)	3648	3692	3650	3583	3650	3645
Travel Time (hr)	303.6	281.8	221.9	219.5	322.6	269.9
Total Delay (hr)	174.3	150.9	92.4	92.3	193.2	140.6
Total Stops	8530	8435	6939	6900	8363	7831
Fuel Used (gal)	160.9	158.0	141.8	139.7	166.2	153.3

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	5523	5668	5515	5449	5600	5550
Vehs Exited	5427	5569	5516	5426	5494	5486
Starting Vehs	186	190	196	194	186	187
Ending Vehs	282	289	195	217	292	249
Denied Entry Before	0	0	0	2	0	0
Denied Entry After	54	44	1	0	99	38
Travel Distance (mi)	3648	3692	3650	3583	3650	3645
Travel Time (hr)	303.6	281.8	221.9	219.5	322.6	269.9
Total Delay (hr)	174.3	150.9	92.4	92.3	193.2	140.6
Total Stops	8530	8435	6939	6900	8363	7831
Fuel Used (gal)	160.9	158.0	141.8	139.7	166.2	153.3

2: Sherwood St & Veranda 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	0.1	0.1	0.1	0.2	0.2	0.3	0.1	0.1	0.2
Total Del/Veh (s)	5.0	3.3	2.1	9.0	7.3	5.7	61.3	33.3	56.6	19.1	25.5	17.8
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

2: Sherwood St & Veranda St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	18.2
Denied Entry Before	0
Denied Entry After	0

3: I-295 Exit Ramp Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.6	0.3	0.6	0.5
Total Del/Veh (s)	5.6	10.4	26.8	14.8	12.5
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.3	0.2	0.1	2.5	3.3	0.7	0.0	0.1	0.0	0.2	0.0	0.1
Total Del/Veh (s)	58.2	49.0	29.4	95.8	88.8	69.0	94.0	38.9	35.2	41.4	15.1	13.5
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	38.0
Denied Entry Before	0
Denied Entry After	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.1	0.1	0.4	0.4	2.8	0.0	0.0	0.0	0.3	0.0	0.0
Total Del/Veh (s)	56.8	59.8	16.0	46.4	48.3	32.5	61.5	44.9	9.4	56.2	28.5	36.3
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	34.7
Denied Entry Before	0
Denied Entry After	0

6: Washington Ave & W Kidder Street/E Kidder Street Performance by movement

Movement	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	7.2	0.8	0.9	1.0	0.4
Total Del/Veh (s)	35.6	12.1	15.3	14.0	7.1	7.2	18.8	2.3	2.3	5.0
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

10: Baxter Blvd/I-295 Ramps & Bates St Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	3.6	0.6	0.2	0.2	0.0	0.0	0.0	0.9
Total Del/Veh (s)	4.2	0.6	0.4	0.1	13.3	1.2	0.0	2.2
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

12: I-295 On Ramp/WORDSWORTH St & Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.1	0.1	0.0
Total Del/Veh (s)	41.9	23.8	26.4	12.9	12.8	12.2		48.3	10.1	16.3
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

16: I-295 Exit Ramp Performance by movement

Movement	SET	SER	NWT	All
Denied Del/Veh (s)	0.0	0.0	38.8	21.7
Total Del/Veh (s)	2.4	4.3	68.3	40.1
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	38	38

Total Network Performance

Denied Del/Veh (s)	12.5
Total Del/Veh (s)	76.0
Denied Entry Before	0
Denied Entry After	38

Intersection: 2: Sherwood St & Veranda St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	101	157	393	95
Average Queue (ft)	28	38	161	47
95th Queue (ft)	76	116	441	88
Link Distance (ft)	425	1544	1449	847
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: I-295 Exit Ramp

Movement	EB	WB	NB	NB
Directions Served	T	T	L	R
Maximum Queue (ft)	91	294	98	303
Average Queue (ft)	12	171	35	152
95th Queue (ft)	53	272	75	264
Link Distance (ft)	421	949	340	340
Upstream Blk Time (%)				0
Queuing Penalty (veh)				0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	174	243	443	125	250	357	350	125	290	308
Average Queue (ft)	45	116	275	118	172	325	324	80	174	197
95th Queue (ft)	117	213	477	144	296	344	342	140	265	283
Link Distance (ft)		324	425			313	313		1016	1016
Upstream Blk Time (%)		0	8			35	32			
Queuing Penalty (veh)		0	31			293	273			
Storage Bay Dist (ft)	150			95	175			100		
Storage Blk Time (%)	0	7	38	41	4	48		8	16	
Queuing Penalty (veh)	0	3	93	62	27	60		41	18	

Intersection: 5: Washington Ave & Presumpscot St

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	T	R	L	TR
Maximum Queue (ft)	81	416	150	95	906	735	149	788
Average Queue (ft)	28	196	54	9	530	118	30	391
95th Queue (ft)	64	329	144	56	830	400	96	729
Link Distance (ft)	607	1387			1016	1016		1441
Upstream Blk Time (%)					0	0		
Queuing Penalty (veh)					1	0		
Storage Bay Dist (ft)			100	150			100	
Storage Blk Time (%)		37	0		37		0	27
Queuing Penalty (veh)		18	1		3		0	10

Intersection: 6: Washington Ave & W Kidder Street/E Kidder Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	43	38	239	83
Average Queue (ft)	11	10	39	4
95th Queue (ft)	37	33	147	49
Link Distance (ft)	945	1677	1441	1320
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Baxter Blvd/I-295 Ramps & Bates St

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	65	11	40	92
Average Queue (ft)	22	0	4	37
95th Queue (ft)	53	7	22	74
Link Distance (ft)		818	476	102
Upstream Blk Time (%)				1
Queuing Penalty (veh)				2
Storage Bay Dist (ft)	175			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	236	409	25
Average Queue (ft)	120	232	3
95th Queue (ft)	200	403	16
Link Distance (ft)	1544	421	528
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		1	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: I-295 Exit Ramp

Movement	NW	NW
Directions Served	T	T
Maximum Queue (ft)	854	826
Average Queue (ft)	618	600
95th Queue (ft)	1125	1129
Link Distance (ft)	897	897
Upstream Blk Time (%)	27	26
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 935

Intersection: 3: I-295 Exit Ramp

Phase	2	4	6
Movement(s) Served	EBT	NBL	WBT
Maximum Green (s)	59.0	19.0	59.0
Minimum Green (s)	5.0	5.0	5.0
Recall	C-Max	Max	C-Max
Avg. Green (s)	59.0	19.0	59.0
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	100	100	100
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	10.0	68.0	24.0	19.0	59.0	24.0
Minimum Green (s)	5.0	10.0	5.0	5.0	10.0	5.0
Recall	Max	C-Min	None	Max	C-Min	None
Avg. Green (s)	10.3	68.0	23.7	19.0	59.3	23.7
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	100	90	100	100	90
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 5: Washington Ave & Presumpscot St

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBTL	WBTL	EBTL	SBL	NBTL
Maximum Green (s)	4.0	53.0	25.0	14.0	4.0	53.0
Minimum Green (s)	4.0	10.0	5.0	4.0	4.0	10.0
Recall	None	C-Min	Min	None	None	C-Min
Avg. Green (s)	6.5	74.1	26.0	7.4	6.9	71.3
g/C Ratio	-0.01	NA	NA	-0.01	-0.01	NA
Cycles Skipped (%)	89	0	0	45	68	0
Cycles @ Minimum (%)	0	0	0	0	7	0
Cycles Maxed Out (%)	0	100	20	0	7	100
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Phase	2	4	6
Movement(s) Served	EBTL	SBTL	WBTL
Maximum Green (s)	19.0	19.0	34.0
Minimum Green (s)	5.0	5.0	5.0
Recall	None	None	C-Max
Avg. Green (s)	15.3	10.8	70.6
g/C Ratio	-0.01	-0.01	-0.01
Cycles Skipped (%)	8	97	8
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	0	0	92
Cycles with Peds (%)	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	4700	4834	4757	4720	4640	4728
Vehs Exited	4683	4835	4743	4698	4655	4723
Starting Vehs	163	183	167	171	182	170
Ending Vehs	180	182	181	193	167	179
Denied Entry Before	1	1	2	1	2	0
Denied Entry After	2	0	0	2	0	0
Travel Distance (mi)	3106	3186	3086	3100	3084	3112
Travel Time (hr)	179.2	182.3	175.7	178.7	173.6	177.9
Total Delay (hr)	67.2	67.3	64.4	66.6	61.9	65.5
Total Stops	5180	5330	5135	5240	4923	5160
Fuel Used (gal)	118.3	121.0	116.7	117.6	116.5	118.0

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	4700	4834	4757	4720	4640	4728
Vehs Exited	4683	4835	4743	4698	4655	4723
Starting Vehs	163	183	167	171	182	170
Ending Vehs	180	182	181	193	167	179
Denied Entry Before	1	1	2	1	2	0
Denied Entry After	2	0	0	2	0	0
Travel Distance (mi)	3106	3186	3086	3100	3084	3112
Travel Time (hr)	179.2	182.3	175.7	178.7	173.6	177.9
Total Delay (hr)	67.2	67.3	64.4	66.6	61.9	65.5
Total Stops	5180	5330	5135	5240	4923	5160
Fuel Used (gal)	118.3	121.0	116.7	117.6	116.5	118.0

2: Sherwood St & Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.7	0.2	0.4	0.2	0.1
Total Del/Veh (s)	3.6	2.4	1.8	6.6	3.0	2.0	9.2	3.5	8.9	12.1	6.2	4.2
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: I-295 Exit Ramp Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.5	0.2	0.5	0.5
Total Del/Veh (s)	8.4	9.5	26.4	9.7	10.0
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda 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	0.0	0.4	0.4	0.0	0.2	0.2	0.2	0.0	0.1
Total Del/Veh (s)	43.1	38.2	24.2	51.4	44.2	21.4	56.4	28.1	23.4	31.3	21.8	20.5
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	27.7
Denied Entry Before	0
Denied Entry After	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.1	0.4	0.1	3.1	0.0	0.0	0.0	0.5	0.1	0.0
Total Del/Veh (s)	58.6	57.0	12.1	48.6	41.8	28.6	37.6	27.3	6.5	61.6	40.7	36.4
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	34.5
Denied Entry Before	0
Denied Entry After	0

6: Washington Ave & W Kidder Street/E Kidder Street Performance by movement

Movement	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.0	0.0	0.0	1.8	1.1	0.6	0.7
Total Del/Veh (s)	8.2	58.9	49.4	9.5	16.2	6.0	5.0	9.4	2.9	1.3	4.4
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

10: Baxter Blvd/I-295 Ramps & Bates St Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	3.6	0.6	0.2	0.2	0.0	0.0	0.0	1.0
Total Del/Veh (s)	3.4	0.7	1.8	1.8	10.0	0.9	0.1	2.2
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

12: I-295 On Ramp/WORDSWORTH St & Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0
Total Del/Veh (s)	32.0	28.9	25.5	12.8	14.2	5.5	27.6	42.5	4.8	16.5
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

16: I-295 Exit Ramp Performance by movement

Movement	SET	SER	NWT	All
Denied Del/Veh (s)	0.0	0.0	0.3	0.1
Total Del/Veh (s)	3.9	5.6	3.2	4.5
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.8
Total Del/Veh (s)	47.4
Denied Entry Before	0
Denied Entry After	0

Intersection: 2: Sherwood St & Veranda St

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	R	LTR
Maximum Queue (ft)	80	78	67	30	108
Average Queue (ft)	11	11	14	5	53
95th Queue (ft)	42	42	48	22	87
Link Distance (ft)	417	1539	1449		847
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				165	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: I-295 Exit Ramp

Movement	EB	WB	NB	NB
Directions Served	T	T	L	R
Maximum Queue (ft)	90	301	70	205
Average Queue (ft)	17	145	24	105
95th Queue (ft)	60	248	61	171
Link Distance (ft)	421	949	340	340
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	134	226	268	125	250	341	348	125	358	408
Average Queue (ft)	36	99	118	83	106	293	278	59	234	262
95th Queue (ft)	93	181	219	153	240	359	360	133	333	362
Link Distance (ft)		324	417			313	313		1016	1016
Upstream Blk Time (%)		0				5	3			
Queuing Penalty (veh)		0				30	17			
Storage Bay Dist (ft)	150			95	175			100		
Storage Blk Time (%)	0	4	23	5	0	26		2	26	
Queuing Penalty (veh)	0	1	24	8	0	21		14	19	

Intersection: 5: Washington Ave & Presumpscot St

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	T	R	L	TR
Maximum Queue (ft)	72	473	150	73	662	231	150	1012
Average Queue (ft)	30	232	39	6	275	37	50	566
95th Queue (ft)	63	399	126	38	571	133	134	969
Link Distance (ft)	607	1387			1016	1016		1441
Upstream Blk Time (%)								0
Queuing Penalty (veh)								1
Storage Bay Dist (ft)			100	150			100	
Storage Blk Time (%)		41	0		22		0	34
Queuing Penalty (veh)		14	0		2		1	19

Intersection: 6: Washington Ave & W Kidder Street/E Kidder Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	30	46	316	144
Average Queue (ft)	7	8	24	9
95th Queue (ft)	27	32	160	102
Link Distance (ft)	945	1677	1441	1320
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Baxter Blvd/I-295 Ramps & Bates St

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	75	16	80	93
Average Queue (ft)	23	1	13	34
95th Queue (ft)	59	8	52	67
Link Distance (ft)		818	476	102
Upstream Blk Time (%)				0
Queuing Penalty (veh)				0
Storage Bay Dist (ft)	175			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	204	389	34
Average Queue (ft)	97	190	7
95th Queue (ft)	172	343	23
Link Distance (ft)	1539	421	528
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		1	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: I-295 Exit Ramp

Movement	NW	NW
Directions Served	T	T
Maximum Queue (ft)	302	281
Average Queue (ft)	60	31
95th Queue (ft)	194	146
Link Distance (ft)	897	897
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 172

Intersection: 3: I-295 Exit Ramp

Phase	2	4	6
Movement(s) Served	EBT	NBL	WBT
Maximum Green (s)	59.0	19.0	59.0
Minimum Green (s)	5.0	5.0	5.0
Recall	C-Max	Max	C-Max
Avg. Green (s)	59.0	19.0	59.0
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	100	100	100
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	14.0	58.0	30.0	11.0	61.0	30.0
Minimum Green (s)	5.0	10.0	5.0	5.0	10.0	5.0
Recall	Max	C-Min	None	Max	C-Min	None
Avg. Green (s)	19.8	58.0	24.1	26.4	50.8	24.1
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	33	100	100	33
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 5: Washington Ave & Presumpscot St

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBTL	WBTL	EBTL	SBL	NBTL
Maximum Green (s)	4.0	52.0	25.0	15.0	6.5	49.5
Minimum Green (s)	4.0	10.0	5.0	4.0	4.0	10.0
Recall	None	C-Min	Min	None	None	C-Min
Avg. Green (s)	9.7	71.1	28.3	7.6	7.0	64.7
g/C Ratio	-0.01	NA	NA	-0.01	-0.01	NA
Cycles Skipped (%)	96	0	0	38	45	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	0	100	27	0	7	100
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Phase	2	4	6
Movement(s) Served	EBTL	SBTL	WBTL
Maximum Green (s)	19.0	19.0	34.0
Minimum Green (s)	5.0	5.0	5.0
Recall	None	None	C-Max
Avg. Green (s)	13.5	6.3	75.3
g/C Ratio	-0.01	-0.01	-0.01
Cycles Skipped (%)	13	82	11
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	0	0	89
Cycles with Peds (%)	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5478	5558	5574	5490	5585	5535
Vehs Exited	5487	5579	5503	5478	5595	5530
Starting Vehs	225	202	195	187	207	199
Ending Vehs	216	181	266	199	197	210
Denied Entry Before	1	0	0	0	0	0
Denied Entry After	0	0	1	0	1	0
Travel Distance (mi)	3640	3658	3667	3567	3674	3641
Travel Time (hr)	206.0	214.4	226.9	201.4	223.6	214.5
Total Delay (hr)	77.1	84.5	96.8	75.1	93.2	85.3
Total Stops	6137	6748	7514	6164	7111	6734
Fuel Used (gal)	137.5	140.1	143.1	135.3	142.6	139.7

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	5478	5558	5574	5490	5585	5535
Vehs Exited	5487	5579	5503	5478	5595	5530
Starting Vehs	225	202	195	187	207	199
Ending Vehs	216	181	266	199	197	210
Denied Entry Before	1	0	0	0	0	0
Denied Entry After	0	0	1	0	1	0
Travel Distance (mi)	3640	3658	3667	3567	3674	3641
Travel Time (hr)	206.0	214.4	226.9	201.4	223.6	214.5
Total Delay (hr)	77.1	84.5	96.8	75.1	93.2	85.3
Total Stops	6137	6748	7514	6164	7111	6734
Fuel Used (gal)	137.5	140.1	143.1	135.3	142.6	139.7

2: Sherwood St & Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.0	0.3	1.6	0.2	0.2	0.2	0.2
Total Del/Veh (s)	5.2	3.4	2.3	7.7	3.5	2.4	19.7	5.7	15.2	19.6	8.2	6.8
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: I-295 Exit Ramp Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.6	0.2	0.6	0.5
Total Del/Veh (s)	18.4	16.8	21.3	12.0	15.1
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.7	0.1	0.0	0.1	0.5	0.2	0.0	0.1	0.1	0.2	0.0	0.1
Total Del/Veh (s)	43.0	40.2	24.9	54.5	48.9	37.6	62.8	27.6	23.2	73.4	35.7	34.4
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	35.0
Denied Entry Before	0
Denied Entry After	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.1	0.1	0.4	0.3	2.8	0.0	0.0	0.0	0.3	0.0	0.0
Total Del/Veh (s)	57.2	54.1	19.3	45.5	50.1	29.5	42.2	37.8	8.1	52.5	22.9	24.2
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	29.7
Denied Entry Before	0
Denied Entry After	0

6: Washington Ave & W Kidder Street/E Kidder Street Performance by movement

Movement	EBT	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.0	0.0	0.0	0.5	0.8	0.7	0.4
Total Del/Veh (s)	16.4	11.7	14.7	14.1	7.4	6.8	24.5	2.2	2.5	5.2
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

10: Baxter Blvd/I-295 Ramps & Bates St Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	3.6	0.6	0.2	0.2	0.0	0.0	0.0	0.9
Total Del/Veh (s)	4.1	0.6	0.4	0.2	10.6	0.7	0.0	1.9
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

12: I-295 On Ramp/WORDSWORTH St & Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0
Total Del/Veh (s)	33.1	23.2	25.2	6.9	6.9	5.2	37.0	58.0	6.7	11.8
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

16: I-295 Exit Ramp Performance by movement

Movement	SET	SER	NWT	All
Denied Del/Veh (s)	0.0	0.0	0.5	0.3
Total Del/Veh (s)	3.6	5.0	12.2	9.1
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.7
Total Del/Veh (s)	52.8
Denied Entry Before	0
Denied Entry After	0

Intersection: 2: Sherwood St & Veranda St

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	R	LTR
Maximum Queue (ft)	108	117	144	73	89
Average Queue (ft)	30	25	63	36	43
95th Queue (ft)	76	73	110	59	72
Link Distance (ft)	417	1539	1449		847
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				165	
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Intersection: 3: I-295 Exit Ramp

Movement	EB	WB	NB	NB
Directions Served	T	T	L	R
Maximum Queue (ft)	162	409	126	319
Average Queue (ft)	77	223	30	133
95th Queue (ft)	138	352	84	238
Link Distance (ft)	421	949	340	340
Upstream Blk Time (%)			0	0
Queuing Penalty (veh)			0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	130	216	369	125	250	344	347	125	420	425
Average Queue (ft)	42	119	195	115	152	304	299	96	296	308
95th Queue (ft)	96	192	331	141	281	368	370	148	423	432
Link Distance (ft)		324	417			313	313		1016	1016
Upstream Blk Time (%)			0			14	12			
Queuing Penalty (veh)			0			121	99			
Storage Bay Dist (ft)	150			95	175			100		
Storage Blk Time (%)		5	21	25	1	34		15	39	
Queuing Penalty (veh)		2	51	38	7	43		79	43	

Intersection: 5: Washington Ave & Presumpscot St

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	T	R	L	TR
Maximum Queue (ft)	82	375	150	130	949	670	149	666
Average Queue (ft)	29	196	50	9	565	183	28	345
95th Queue (ft)	71	317	141	63	1025	621	95	577
Link Distance (ft)	607	1387			1016	1016		1441
Upstream Blk Time (%)					1	0		
Queuing Penalty (veh)					6	2		
Storage Bay Dist (ft)			100	150			100	
Storage Blk Time (%)		36	0		23		1	26
Queuing Penalty (veh)		18	0		2		5	9

Intersection: 6: Washington Ave & W Kidder Street/E Kidder Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	35	29	317	133
Average Queue (ft)	10	10	45	5
95th Queue (ft)	34	33	182	60
Link Distance (ft)	945	1677	1441	1320
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Baxter Blvd/I-295 Ramps & Bates St

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	58	37	77
Average Queue (ft)	22	3	34
95th Queue (ft)	54	18	60
Link Distance (ft)		476	102
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)	175		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	220	207	25
Average Queue (ft)	116	103	3
95th Queue (ft)	187	196	16
Link Distance (ft)	1539	421	528
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: I-295 Exit Ramp

Movement	NW	NW
Directions Served	T	T
Maximum Queue (ft)	480	484
Average Queue (ft)	150	137
95th Queue (ft)	449	435
Link Distance (ft)	897	897
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 524

Intersection: 3: I-295 Exit Ramp

Phase	2	4	6
Movement(s) Served	EBT	NBL	WBT
Maximum Green (s)	51.0	27.0	51.0
Minimum Green (s)	5.0	5.0	5.0
Recall	C-Max	Max	C-Max
Avg. Green (s)	51.0	27.0	51.0
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	100	100	100
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	17.0	54.0	31.0	9.0	62.0	31.0
Minimum Green (s)	5.0	10.0	5.0	5.0	10.0	5.0
Recall	Max	C-Min	None	Max	C-Min	None
Avg. Green (s)	20.4	54.0	27.6	10.3	64.0	27.6
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	100	53	100	100	53
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 5: Washington Ave & Presumpscot St

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBTL	WBTL	EBTL	SBL	NBTL
Maximum Green (s)	4.0	53.0	25.0	14.0	4.0	53.0
Minimum Green (s)	4.0	10.0	5.0	4.0	4.0	10.0
Recall	None	C-Min	Min	None	None	C-Min
Avg. Green (s)	10.3	73.7	26.7	7.8	7.1	70.8
g/C Ratio	-0.01	NA	NA	-0.01	-0.01	NA
Cycles Skipped (%)	96	0	0	48	71	0
Cycles @ Minimum (%)	0	0	0	0	4	0
Cycles Maxed Out (%)	0	100	13	0	7	100
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Phase	2	4	6
Movement(s) Served	EBTL	SBTL	WBTL
Maximum Green (s)	19.0	19.0	34.0
Minimum Green (s)	5.0	5.0	5.0
Recall	None	None	C-Max
Avg. Green (s)	14.9	5.8	68.4
g/C Ratio	-0.01	-0.01	-0.01
Cycles Skipped (%)	5	92	5
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	0	0	95
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	4968	4896	4851	4883	4850	4888
Vehs Exited	4951	4879	4845	4872	4819	4874
Starting Vehs	173	154	160	162	165	159
Ending Vehs	190	171	166	173	196	178
Denied Entry Before	3	0	2	0	1	0
Denied Entry After	0	1	0	1	1	0
Travel Distance (mi)	3135	3112	3082	3092	3067	3097
Travel Time (hr)	175.0	179.0	167.2	171.6	171.9	172.9
Total Delay (hr)	61.8	66.6	56.0	60.0	61.1	61.1
Total Stops	5165	5511	4683	4981	5100	5088
Fuel Used (gal)	118.2	118.6	114.5	116.0	115.4	116.6

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	4968	4896	4851	4883	4850	4888
Vehs Exited	4951	4879	4845	4872	4819	4874
Starting Vehs	173	154	160	162	165	159
Ending Vehs	190	171	166	173	196	178
Denied Entry Before	3	0	2	0	1	0
Denied Entry After	0	1	0	1	1	0
Travel Distance (mi)	3135	3112	3082	3092	3067	3097
Travel Time (hr)	175.0	179.0	167.2	171.6	171.9	172.9
Total Delay (hr)	61.8	66.6	56.0	60.0	61.1	61.1
Total Stops	5165	5511	4683	4981	5100	5088
Fuel Used (gal)	118.2	118.6	114.5	116.0	115.4	116.6

2: Sherwood St & Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.1	0.2	0.2	0.2	0.1
Total Del/Veh (s)	3.2	2.2	1.6	5.8	2.0	2.3	7.3	3.3	8.6	10.8	5.5	4.1
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: I-295 Exit Ramp Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.5	0.2	0.4	0.4
Total Del/Veh (s)	9.6	9.1	23.6	9.9	9.8
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.7	0.0	0.2	0.1	0.2	0.0	0.1	0.1
Total Del/Veh (s)	50.6	44.2	30.4	43.3	8.1	50.7	27.5	22.0	37.3	23.7	22.9	27.2
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

5: Washington Ave & Presumpscot 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	0.1	0.4	0.8	3.1	0.0	0.0	0.0	0.2	0.1	0.0
Total Del/Veh (s)	57.0	58.8	20.9	45.9	34.3	22.2	40.4	22.7	6.7	50.5	35.9	42.3
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	30.4
Denied Entry Before	0
Denied Entry After	0

6: Washington Ave & W Kidder Street/E Kidder Street Performance by movement

Movement	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.2	0.2	0.0	0.0	1.0	1.0	1.7	0.6
Total Del/Veh (s)	12.3	27.1	29.5	11.8	14.7	5.9	5.2	11.9	2.9	2.1	4.4
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

10: Baxter Blvd/I-295 Ramps & Bates St Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	3.5	0.6	0.2	0.3	0.0	0.0	0.0	1.0
Total Del/Veh (s)	3.5	0.6	1.9	1.9	9.7	0.6	0.1	2.2
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

12: I-295 On Ramp/WORDSWORTH St & Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.5	0.2	0.0		0.1	0.1	0.3
Total Del/Veh (s)	30.3	25.7	23.7	16.3	17.0	19.7		54.8	3.7	19.0
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

16: I-295 Exit Ramp Performance by movement

Movement	SET	SER	NWT	All
Denied Del/Veh (s)	0.0	0.2	0.3	0.2
Total Del/Veh (s)	3.7	5.4	2.5	4.1
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.8
Total Del/Veh (s)	42.7
Denied Entry Before	0
Denied Entry After	0

Intersection: 2: Sherwood St & Veranda St

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	R	LTR
Maximum Queue (ft)	42	48	58	30	135
Average Queue (ft)	6	10	8	8	53
95th Queue (ft)	26	32	36	29	97
Link Distance (ft)	418	1539	1449		848
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				165	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: I-295 Exit Ramp

Movement	EB	WB	NB	NB
Directions Served	T	T	L	R
Maximum Queue (ft)	98	312	56	224
Average Queue (ft)	23	142	20	112
95th Queue (ft)	73	241	51	188
Link Distance (ft)	421	949	340	340
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	174	229	126	92	250	332	334	124	358	392
Average Queue (ft)	49	125	43	22	90	254	240	64	239	256
95th Queue (ft)	125	202	92	57	217	359	355	137	353	369
Link Distance (ft)		324	418			313	313		1005	1005
Upstream Blk Time (%)						4	3			
Queuing Penalty (veh)						24	18			
Storage Bay Dist (ft)	150			95	175			100		
Storage Blk Time (%)	0	6	2	0	0	25		1	29	
Queuing Penalty (veh)	0	2	1	0	0	20		7	21	

Intersection: 5: Washington Ave & Presumpscot St

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	T	R	L	TR
Maximum Queue (ft)	81	471	150	133	651	310	150	910
Average Queue (ft)	33	217	31	11	294	56	44	508
95th Queue (ft)	71	369	108	62	624	180	126	875
Link Distance (ft)	607	1387			1005	1005		1441
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			100	150			100	
Storage Blk Time (%)		38	0		12		1	32
Queuing Penalty (veh)		13	0		1		5	18

Intersection: 6: Washington Ave & W Kidder Street/E Kidder Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	34	38	311	199
Average Queue (ft)	7	8	22	10
95th Queue (ft)	27	30	136	97
Link Distance (ft)	945	1677	1441	1320
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Baxter Blvd/I-295 Ramps & Bates St

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	77	6	85	78
Average Queue (ft)	25	0	12	33
95th Queue (ft)	62	4	50	67
Link Distance (ft)		818	476	102
Upstream Blk Time (%)				0
Queuing Penalty (veh)				0
Storage Bay Dist (ft)	175			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	283	406	34
Average Queue (ft)	131	226	5
95th Queue (ft)	224	378	25
Link Distance (ft)	1539	421	528
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		2	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: I-295 Exit Ramp

Movement	SE	SE	NW	NW
Directions Served	R	R	T	T
Maximum Queue (ft)	48	80	183	141
Average Queue (ft)	2	3	22	18
95th Queue (ft)	33	41	102	88
Link Distance (ft)	313	313	897	897
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 131

Intersection: 3: I-295 Exit Ramp

Phase	2	4	6
Movement(s) Served	EBT	NBL	WBT
Maximum Green (s)	59.0	19.0	59.0
Minimum Green (s)	5.0	5.0	5.0
Recall	C-Max	Max	C-Max
Avg. Green (s)	59.0	19.0	59.0
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	100	100	100
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBT	SBL	NBT	EBTL
Maximum Green (s)	12.0	64.0	26.0	13.0	63.0	26.0
Minimum Green (s)	5.0	10.0	5.0	5.0	10.0	5.0
Recall	Max	C-Min	None	Max	C-Min	None
Avg. Green (s)	20.0	64.0	18.0	31.9	52.1	18.0
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	10	100	100	10
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 5: Washington Ave & Presumpscot St

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBTL	WBTL	EBTL	SBL	NBTL
Maximum Green (s)	4.0	52.0	25.0	15.0	6.5	49.5
Minimum Green (s)	4.0	10.0	5.0	4.0	4.0	10.0
Recall	None	C-Min	Min	None	None	C-Min
Avg. Green (s)	8.8	72.5	28.3	7.5	7.7	67.8
g/C Ratio	-0.01	NA	NA	-0.01	-0.01	NA
Cycles Skipped (%)	96	0	0	45	61	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	0	100	17	0	7	100
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Phase	2	4	6
Movement(s) Served	EBTL	SBTL	WBTL
Maximum Green (s)	19.0	19.0	34.0
Minimum Green (s)	5.0	5.0	5.0
Recall	Min	None	C-Max
Avg. Green (s)	17.2	7.0	59.3
g/C Ratio	NA	-0.01	NA
Cycles Skipped (%)	0	87	0
Cycles @ Minimum (%)	5	0	0
Cycles Maxed Out (%)	3	0	100
Cycles with Peds (%)	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5624	5741	5766	5570	5749	5692
Vehs Exited	5593	5749	5674	5535	5705	5651
Starting Vehs	184	185	168	188	161	172
Ending Vehs	215	177	260	223	205	212
Denied Entry Before	0	2	1	1	0	0
Denied Entry After	2	0	1	1	1	1
Travel Distance (mi)	3651	3719	3710	3605	3742	3685
Travel Time (hr)	213.0	212.9	240.5	203.5	208.3	215.6
Total Delay (hr)	83.8	81.3	109.0	75.6	75.9	85.1
Total Stops	6709	6669	8090	6262	6178	6779
Fuel Used (gal)	139.7	141.5	147.8	136.2	140.9	141.2

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	5624	5741	5766	5570	5749	5692
Vehs Exited	5593	5749	5674	5535	5705	5651
Starting Vehs	184	185	168	188	161	172
Ending Vehs	215	177	260	223	205	212
Denied Entry Before	0	2	1	1	0	0
Denied Entry After	2	0	1	1	1	1
Travel Distance (mi)	3651	3719	3710	3605	3742	3685
Travel Time (hr)	213.0	212.9	240.5	203.5	208.3	215.6
Total Delay (hr)	83.8	81.3	109.0	75.6	75.9	85.1
Total Stops	6709	6669	8090	6262	6178	6779
Fuel Used (gal)	139.7	141.5	147.8	136.2	140.9	141.2

2: Sherwood St & Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.6	0.2	0.1	0.2	0.3
Total Del/Veh (s)	4.5	3.2	2.1	7.1	3.0	1.6	13.0	6.0	11.8	17.6	6.3	5.2
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: I-295 Exit Ramp Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.6	0.2	0.5	0.5
Total Del/Veh (s)	17.2	16.6	20.2	11.3	14.5
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.4	0.1	0.0	0.0	0.4	0.0	0.1	0.1	0.2	0.0	0.1	0.1
Total Del/Veh (s)	54.3	45.7	25.6	47.5	17.5	54.7	26.5	22.0	51.4	30.5	28.6	30.4
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.1	0.1	0.4	0.4	3.0	0.0	0.0	0.0	0.4	0.0	0.0
Total Del/Veh (s)	50.5	55.6	13.2	45.6	52.8	28.4	68.1	48.3	11.4	54.6	24.5	27.0
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

5: Washington Ave & Presumpscot St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	34.6
Denied Entry Before	0
Denied Entry After	0

6: Washington Ave & W Kidder Street/E Kidder Street Performance by movement

Movement	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1		0.1	0.0	0.0	0.0	1.8	0.9	0.7	0.4
Total Del/Veh (s)	19.8	12.5		22.3	13.7	7.3	5.2	17.2	2.3	2.4	5.1
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

10: Baxter Blvd/I-295 Ramps & Bates St Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	3.6	0.5	0.2	0.2	0.0	0.0	0.0	0.8
Total Del/Veh (s)	4.1	0.5	0.3	0.1	10.3	0.8	0.0	1.9
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

12: I-295 On Ramp/WORDSWORTH St & Veranda St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.3	0.2	0.0	0.1	0.1	0.1	0.2
Total Del/Veh (s)	33.7	21.3	25.4	8.2	8.4	3.1	25.2	59.2	11.5	13.0
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

16: I-295 Exit Ramp Performance by movement

Movement	SER	NWT	All
Denied Del/Veh (s)	0.2	0.7	0.5
Total Del/Veh (s)	5.5	13.8	10.2
Denied Entry Before	0	0	0
Denied Entry After	0	1	1

Total Network Performance

Denied Del/Veh (s)	0.9
Total Del/Veh (s)	51.4
Denied Entry Before	0
Denied Entry After	1

Intersection: 2: Sherwood St & Veranda St

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	R	LTR
Maximum Queue (ft)	104	78	96	77	79
Average Queue (ft)	23	17	42	45	41
95th Queue (ft)	66	55	73	70	69
Link Distance (ft)	418	1539	1449		848
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				165	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: I-295 Exit Ramp

Movement	EB	WB	NB	NB
Directions Served	T	T	L	R
Maximum Queue (ft)	161	436	68	275
Average Queue (ft)	74	220	25	127
95th Queue (ft)	140	359	59	217
Link Distance (ft)	421	949	340	340
Upstream Blk Time (%)				0
Queuing Penalty (veh)				0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	154	229	199	125	250	349	350	124	403	436
Average Queue (ft)	52	122	90	69	171	300	299	85	274	292
95th Queue (ft)	110	203	166	133	304	377	372	147	396	431
Link Distance (ft)		324	418			313	313		1005	1005
Upstream Blk Time (%)						13	11			
Queuing Penalty (veh)						111	91			
Storage Bay Dist (ft)	150			95	175			100		
Storage Blk Time (%)		4	9	3	1	32		6	32	
Queuing Penalty (veh)		2	12	3	3	40		31	36	

Intersection: 5: Washington Ave & Presumpscot St

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	T	R	L	TR
Maximum Queue (ft)	79	346	150	99	996	960	149	667
Average Queue (ft)	27	190	41	9	668	331	37	355
95th Queue (ft)	64	309	122	64	1122	884	119	631
Link Distance (ft)	607	1387			1005	1005		1441
Upstream Blk Time (%)					2	1		
Queuing Penalty (veh)					18	5		
Storage Bay Dist (ft)			100	150			100	
Storage Blk Time (%)		34	0		29		1	26
Queuing Penalty (veh)		17	0		2		5	9

Intersection: 6: Washington Ave & W Kidder Street/E Kidder Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	38	38	273	107
Average Queue (ft)	10	11	38	4
95th Queue (ft)	34	35	157	45
Link Distance (ft)	945	1677	1441	1320
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Baxter Blvd/I-295 Ramps & Bates St

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	62	5	48	81
Average Queue (ft)	21	0	2	35
95th Queue (ft)	52	4	18	65
Link Distance (ft)		818	476	102
Upstream Blk Time (%)				0
Queuing Penalty (veh)				0
Storage Bay Dist (ft)	175			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	264	277	34
Average Queue (ft)	145	118	6
95th Queue (ft)	234	221	23
Link Distance (ft)	1539	421	528
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: I-295 Exit Ramp

Movement	NW	NW
Directions Served	T	T
Maximum Queue (ft)	476	468
Average Queue (ft)	160	145
95th Queue (ft)	509	489
Link Distance (ft)	897	897
Upstream Blk Time (%)	1	2
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 384

Intersection: 3: I-295 Exit Ramp

Phase	2	4	6
Movement(s) Served	EBT	NBL	WBT
Maximum Green (s)	51.0	27.0	51.0
Minimum Green (s)	5.0	5.0	5.0
Recall	C-Max	Max	C-Max
Avg. Green (s)	51.0	27.0	51.0
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	100	100	100
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 4: I-295 Exit Ramp/Washington Ave & Bates St/Veranda St

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBT	SBL	NBT	EBTL
Maximum Green (s)	20.0	58.0	25.0	14.0	64.0	25.0
Minimum Green (s)	5.0	10.0	5.0	5.0	10.0	5.0
Recall	Max	C-Min	None	Max	C-Min	None
Avg. Green (s)	25.4	58.0	19.5	17.0	66.4	19.5
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	28	100	100	28
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 5: Washington Ave & Presumpscot St

Phase	1	2	3	4	5	6
Movement(s) Served	NBL	SBTL	WBTL	EBTL	SBL	NBTL
Maximum Green (s)	4.0	53.0	25.0	14.0	4.0	53.0
Minimum Green (s)	4.0	10.0	5.0	4.0	4.0	10.0
Recall	None	C-Min	Min	None	None	C-Min
Avg. Green (s)	6.3	75.9	25.5	7.7	7.4	73.3
g/C Ratio	-0.01	NA	NA	-0.01	-0.01	NA
Cycles Skipped (%)	97	0	0	46	76	0
Cycles @ Minimum (%)	0	0	0	0	3	0
Cycles Maxed Out (%)	0	100	10	0	3	100
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 12: I-295 On Ramp/WORDSWORTH St & Veranda St

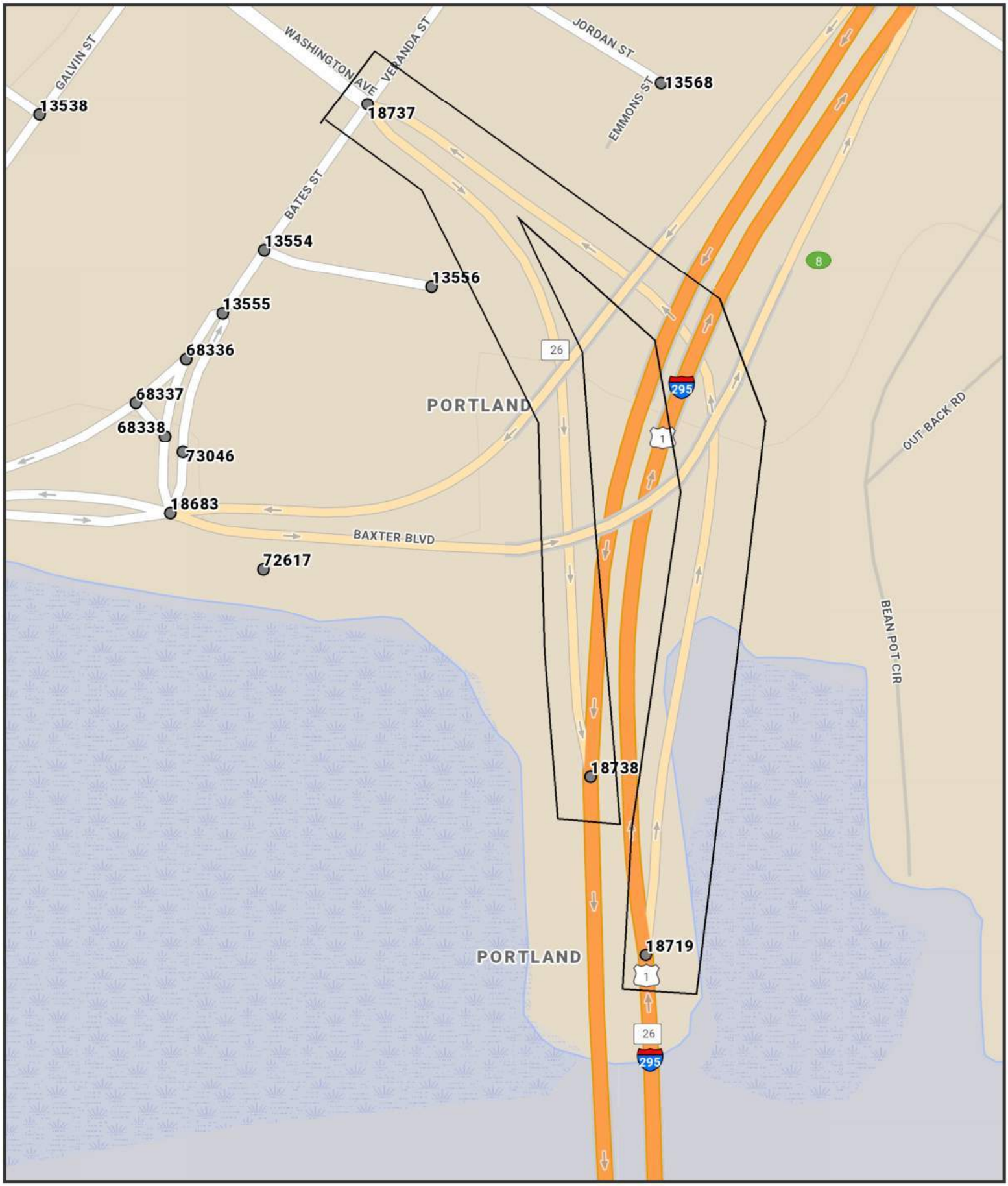
Phase	2	4	6
Movement(s) Served	EBTL	SBTL	WBTL
Maximum Green (s)	19.0	19.0	34.0
Minimum Green (s)	5.0	5.0	5.0
Recall	None	None	C-Max
Avg. Green (s)	17.8	8.6	64.5
g/C Ratio	-0.01	-0.01	-0.01
Cycles Skipped (%)	5	95	5
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	0	0	95
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Attachment 7E

Crash Data Summary
HCL Diagrams

ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY



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0.035 Miles

1 inch = 0.04 miles

Date: 1/9/2024
Time: 8:11:55 AM

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

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

REPORT DESCRIPTION

Portland
Washington Ave. from I-295 NB to Bates/Veranda St.
Washington Ave. SB from Bates/Veranda St. to I-295 SB

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

Route: **0026X**	Start Node: **18719**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18737**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0026S**	Start Node: **18737**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18738**	End Offset: **0**	☑ **Exclude Last Node**

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
Study Years:		**NODE TOTALS:**		0	888	888	888	888	888	100.0	000.000	0000.00	0.00	000.00

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
18719	18737	3123995	0 - 0.24	0026X - 0.97	0.24	2	6	0	0	1	0	5	16.7	0.01104	181.20	176.58	1.03
Int of I 295 NB WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 71.76		
18737	18738	3106787	0 - 0.18	0026S - 1.16	0.18	2	3	0	0	0	0	3	0.0	0.00865	115.57	187.94	0.00
Int of BATES ST VERANDA ST WASH AV SB WASHINGTON AV				ST RTE 26S											Statewide Crash Rate: 71.76		
Study Years: 3.00				**Section Totals:**	0.42		9	0	0	1	0	8	11.1	0.01969	152.36	153.08	1.00
				Grand Totals:	0.42		9	0	0	1	0	8	11.1	0.01969	152.36	204.20	0.75

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
18719	18737	3123995	0 - 0.24	0026X - 0.97	6	0	0	1	0	5	2020-27498	11/10/2020	1.09	PD
											2020-31301	12/13/2020	1.10	PD
											2020-28837	11/21/2020	1.11	B
											2020-31297	12/11/2020	1.11	PD
											2021-19816	07/31/2021	1.16	PD
											2021-26814	10/06/2021	1.18	PD
18737	18738	3106787	0 - 0.18	0026S - 1.16	3	0	0	0	0	3	2020-4458	02/03/2020	1.27	PD
											2022-4195	01/28/2022	1.31	PD
											2021-15607	06/20/2021	1.33	PD
				Totals:	9	0	0	1	0	8				

Crash Summary II - Characteristics

Crashes by Day and Hour

	AM												Hour of Day PM													
Day Of Week	**12**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**Un**	**Tot**
SUNDAY	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
MONDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
TUESDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
WEDNESDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
THURSDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FRIDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
SATURDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
Totals	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	3	2	1	0	0	0	0	0	1	0	**9**

Vehicle Counts by Type

Unit Type	Total
1-Passenger Car	5
2-(Sport) Utility Vehicle	8
3-Passenger Van	0
4-Cargo Van (10K lbs or Less)	0
5-Pickup	1
6-Motor Home	0
7-School Bus	0
8-Transit Bus	0
9-Motor Coach	0
10-Other Bus	0
11-Motorcycle	1
12-Moped	0
13-Low Speed Vehicle	0
14-Autocycle	0
15-Experimental	0
16-Other Light Trucks (10,000 lbs or Less)	0
17-Medium/Heavy Trucks (More than 10,000 lbs)	0
18-ATV - (4 wheel)	0
20-ATV - (2 wheel)	0
21-Snowmobile	0
22-Pedestrian	0

Unit Type	Total
23-Bicyclist	0
24-Witness	0
25-Other	0
26-Construction	0
27-Farm Vehicle	0
28-Horse and Buggy	0
Total	**15**

Crash Summary II - Characteristics

Crashes by Driver Action at Time of Crash

Driver Action at Time of Crash	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
No Contributing Action	1	4	1	0	0	0	6
Ran Off Roadway	0	0	0	0	0	0	0
Failed to Yield Right-of-Way	0	0	0	0	0	0	0
Ran Red Light	0	0	0	0	0	0	0
Ran Stop Sign	0	0	0	0	0	0	0
Disregarded Other Traffic Sign	0	0	0	0	0	0	0
Disregarded Other Road Markings	0	0	0	0	0	0	0
Exceeded Posted Speed Limit	0	0	0	0	0	0	0
Drove Too Fast For Conditions	1	0	0	0	0	0	1
Improper Turn	0	0	0	0	0	0	0
Improper Backing	0	0	0	0	0	0	0
Improper Passing	1	0	0	0	0	0	1
Wrong Way	0	0	0	0	0	0	0
Followed Too Closely	1	0	0	0	0	0	1
Failed to Keep in Proper Lane	2	0	0	0	0	0	2
Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner	1	0	0	0	0	0	1
Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway	0	0	0	0	0	0	0
Over-Correcting/Over-Steering	0	0	0	0	0	0	0
Other Contributing Action	1	1	0	0	0	0	2
Unknown	1	0	0	0	0	0	1
Total	**9**	**5**	**1**	**0**	**0**	**0**	**15**

Crashes by Apparent Physical Condition And Driver

Apparent Physical Condition	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
Apparently Normal	7	5	1	0	0	0	13
Physically Impaired	0	0	0	0	0	0	0
Emotional(Depressed, Angry, Disturbed, etc.)	0	0	0	0	0	0	0
Ill (Sick)	0	0	0	0	0	0	0
Asleep or Fatigued	0	0	0	0	0	0	0
Under the Influence of Medications/Drugs/Alcohol	2	0	0	0	0	0	2
Other	0	0	0	0	0	0	0
Total	**9**	**5**	**1**	**0**	**0**	**0**	**15**

Driver Age by Unit Type

Age	Driver	Bicycle	SnowMobile	Pedestrian	ATV	Total
09-Under	0	0	0	0	0	0
10-14	0	0	0	0	0	0
15-19	1	0	0	0	0	1
20-24	1	0	0	0	0	1
25-29	1	0	0	0	0	1
30-39	2	0	0	0	0	2
40-49	3	0	0	0	0	3
50-59	3	0	0	0	0	3
60-69	3	0	0	0	0	3
70-79	1	0	0	0	0	1
80-Over	0	0	0	0	0	0
Unknown	0	0	0	0	0	0
Total	**15**	**0**	**0**	**0**	**0**	**15**

Crash Summary II - Characteristics

Most Harmful Event

Most Harmful Event	Total	Most Harmful Event	Total
1-Overturn / Rollover	0	38-Other Fixed Object (wall, building, tunnel, etc.)	0
2-Fire / Explosion	0	39-Unknown	1
3-Immersion	0	40-Gate or Cable	0
4-Jackknife	0	41-Pressure Ridge	0
5-Cargo / Equipment Loss Or Shift	0	**Total**	**15**
6-Fell / Jumped from Motor Vehicle	0		
7-Thrown or Falling Object	0		
8-Other Non-Collision	1		
9-Pedestrian	0		
10-Pedalcycle	0		
11-Railway Vehicle - Train, Engine	0		
12-Animal	0		
13-Motor Vehicle in Transport	12		
14-Parked Motor Vehicle	0		
15-Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle	0		
16-Work Zone / Maintenance Equipment	0		
17-Other Non-Fixed Object	0		
18-Impact Attenuator / Crash Cushion	0		
19-Bridge Overhead Structure	0		
20-Bridge Pier or Support	0		
21-Bridge Rail	0		
22-Cable Barrier	0		
23-Culvert	0		
24-Curb	0		
25-Ditch	0		
26-Embankment	0		
27-Guardrail Face	1		
28-Guardrail End	0		
29-Concrete Traffic Barrier	0		
30-Other Traffic Barrier	0		
31-Tree (Standing)	0		
32-Utility Pole / Light Support	0		
33-Traffic Sign Support	0		
34-Traffic Signal Support	0		
35-Fence	0		
36-Mailbox	0		
37-Other Post, Pole, or Support	0		

Injury Data

Severity Code	Injury Crashes	Number Of Injuries
K	0	0
A	0	0
B	1	1
C	0	0
PD	8	0
Total	**9**	**1**

Road Character

Road Grade	Total
1-Level	4
2-On Grade	5
3-Top of Hill	0
4-Bottom of Hill	0
5-Other	0
Total	**9**

Traffic Control Devices

Traffic Control Device	Total
1-Traffic Signals (Stop & Go)	1
2-Traffic Signals (Flashing)	0
3-Advisory/Warning Sign	1
4-Stop Signs - All Approaches	0
5-Stop Signs - Other	0
6-Yield Sign	0
7-Curve Warning Sign	0
8-Officer, Flagman, School Patrol	0
9-School Bus Stop Arm	0
10-School Zone Sign	0
11-R.R. Crossing Device	0
12-No Passing Zone	0
13-None	7
14-Other	0
Total	**9**

Light

Light Condition	Total
1-Daylight	5
2-Dawn	0
3-Dusk	1
4-Dark - Lighted	3
5-Dark - Not Lighted	0
6-Dark - Unknown Lighting	0
7-Unknown	0
Total	**9**

Crash Summary II - Characteristics

Crashes by Year and Month

Month	2020	2021	2022	Total
JANUARY	0	0	1	1
FEBRUARY	1	0	0	1
MARCH	0	0	0	0
APRIL	0	0	0	0
MAY	0	0	0	0
JUNE	0	1	0	1
JULY	0	1	0	1
AUGUST	0	0	0	0
SEPTEMBER	0	0	0	0
OCTOBER	0	1	0	1
NOVEMBER	2	0	0	2
DECEMBER	2	0	0	2
Total	**5**	**3**	**1**	**9**

Report is limited to the last 10 years of data.

Crash Summary II - Characteristics

Crashes by Crash Type and Type of Location

Crash Type	Straight Road	Curved Road	Three Leg Intersection	Four Leg Intersection	Five or More Leg Intersection	Driveways	Bridges	Interchanges	Other	Parking Lot	Private Way	Cross Over	Railroad Crossing	Traffic Circle-Roundabout	Total
Object in Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rear End - Sideswipe	2	0	0	0	0	0	0	3	0	0	0	0	0	0	5
Head-on - Sideswipe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intersection Movement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Train	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Went Off Road	0	1	0	0	0	0	0	2	0	0	0	0	0	0	3
All Other Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Jackknife	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rollover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Submersion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thrown or Falling Object	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**9**

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Blowing Sand, Soil, Dirt												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Blowing Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Clear												
Dark - Lighted	3	0	0	0	0	0	0	0	0	0	0	3
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	2	0	0	0	1	0	0	0	0	0	0	3
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Cloudy												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	1	1
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Fog, Smog, Smoke												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Other												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Rain												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	1	1
Dusk	0	0	0	0	0	0	0	0	0	0	1	1
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Severe Crosswinds												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Sleet, Hail (Freezing Rain or Drizzle)												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**5**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**9**

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

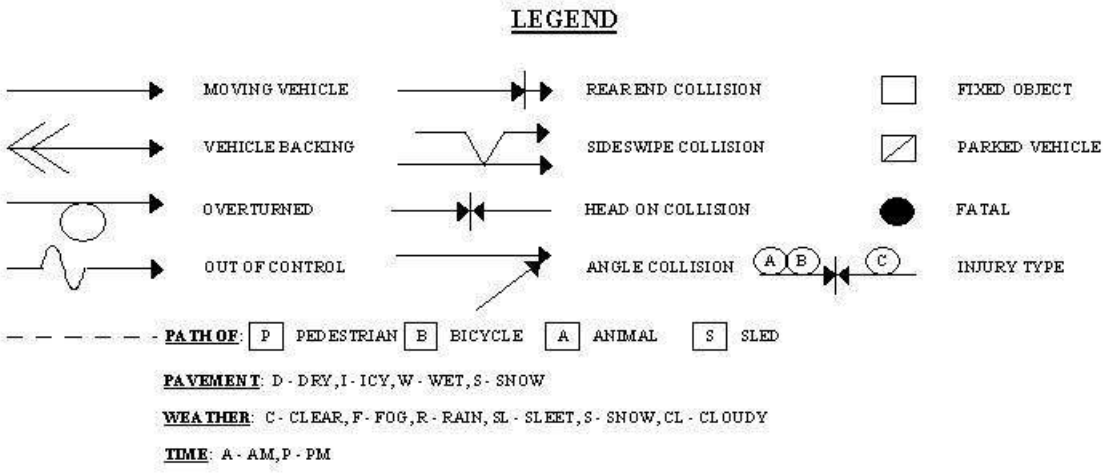
LOW NODE: **18719** HIGH NODE: **18737** REGION: **1** U/R: **URBAN**

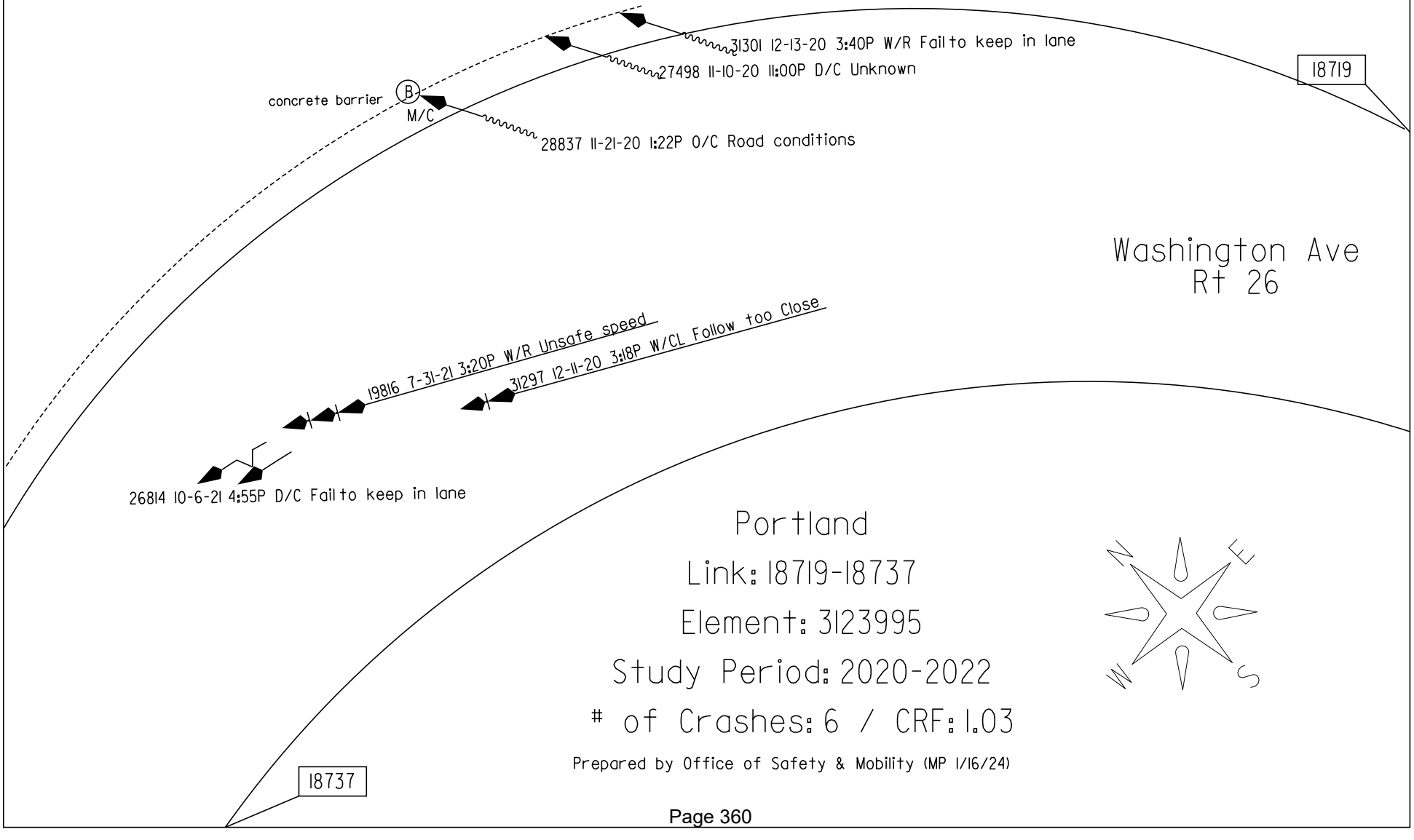
DESCRIPTION: **Washington Ave - I-295 Exit 8 off to Bates St**

RTE # / RD #: **0026X** DATE DRAWN: **1/16/2024** DRAWN BY: **Michelle**

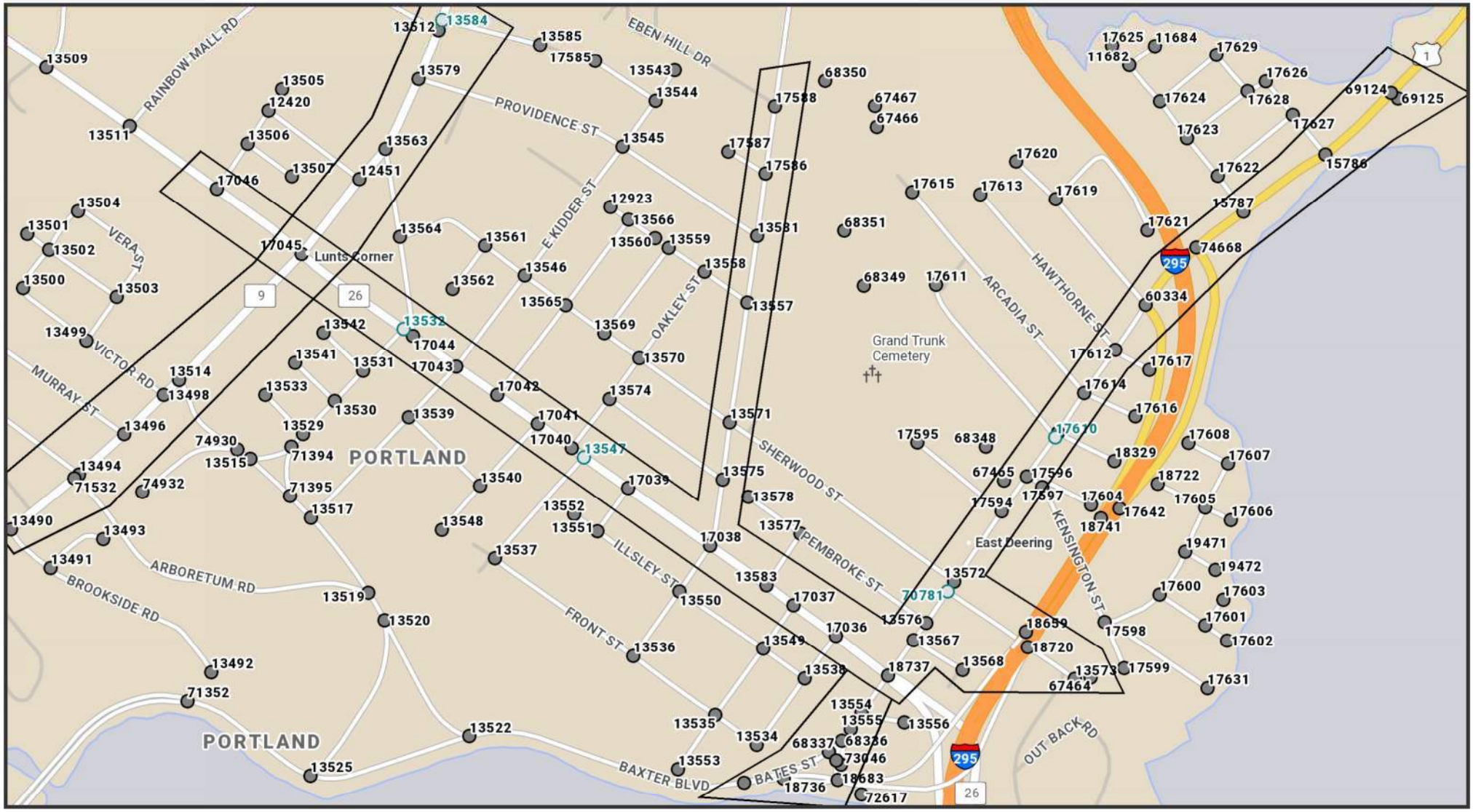
STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **181.2** CRF: **1.03** % INJURY: **16.7** TOTAL CRASHES: **6**




31301 12-13-20 3:40P W/R Fail to keep in lane
27498 11-10-20 11:00P D/C Unknown
18719
concrete barrier
B
M/C
28837 11-21-20 1:22P O/C Road conditions
Washington Ave
Rt 26
19816 7-31-21 3:20P W/R Unsafe speed
31297 12-11-20 3:18P W/CL Follow too Close
26814 10-6-21 4:55P D/C Fail to keep in lane
Portland
Link: 18719-18737
Element: 3123995
Study Period: 2020-2022
# of Crashes: 6 / CRF: 1.03
Prepared by Office of Safety & Mobility (MP 1/16/24)
N
E
W
S
18737

ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY



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0.25 Miles

1 inch = 0.18 miles

Date: 6/1/2023
Time: 11:57:52 AM

LEGEND

LRAP_SEGMENTS_2

RURAL-SA-FC5 | URBAN-TW | RURAL-TW | WCSH | AGREEMENT | URBAN-STW | RURAL-STW | URBAN-SH | NO VALUE | RURAL-SH | RURAL-SA-FC6 | URBAN-SA

LRAP_SEGMENTS_2

RURAL-SA-FC5 | URBAN-TW | RURAL-TW | WCSH | AGREEMENT | URBAN-STW | RURAL-STW | URBAN-SH | NO VALUE | RURAL-SH | RURAL-SA-FC6 | URBAN-SA

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

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

REPORT DESCRIPTION

Portland
Washington Ave., Veranda St., Ocean Ave, Presumpscot St. Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

Route: **0026X**	Start Node: **18737**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **17046**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0009X**	Start Node: **13490**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **17045**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0009X**	Start Node: **17045**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **13584**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0560753**	Start Node: **18737**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **60334**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0001S**	Start Node: **74668**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **60334**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0001X**	Start Node: **74668**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **69124**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0560037**	Start Node: **18737**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18683**	End Offset: **0**	☑ **Exclude Last Node**
Route: **3200512**	Start Node: **68336**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **17592**	End Offset: **0**	☐ **Exclude Last Node**
Route: **3201021**	Start Node: **17592**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18736**	End Offset: **0**	☐ **Exclude Last Node**
Route: **3201022**	Start Node: **18736**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18683**	End Offset: **0**	☐ **Exclude Last Node**
Route: **3209819**	Start Node: **18683**	Start Offset: **0**	☑ **Exclude First Node**

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

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

REPORT DESCRIPTION

Portland
Washington Ave., Veranda St., Ocean Ave, Presumpscot St. Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

	End Node: **13555**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560599**	Start Node: **17038**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **17588**	End Offset: **0**	☐ **Exclude Last Node**
Route: **3209966**	Start Node: **70781**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **13573**	End Offset: **0**	☐ **Exclude Last Node**

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
13583	0026X - 1.35	Int of CHURCHILL ST WASHINGTON AV	2	7	0	0	1	1	5	28.6	8.854	0.26	0.27	0.96
												Statewide Crash Rate:	0.12	
P17044	0026X - 1.75	Int of MORSE ST WASHINGTON AV	2	3	0	0	0	1	2	33.3	6.970	0.14	0.29	0.00
												Statewide Crash Rate:	0.12	
18737	0026X - 1.21	Int of BATES ST VERANDA ST WASH AV SB WASHINGTO	9	17	0	0	1	2	13	18.8	11.095	0.51	0.98	0.52
												Statewide Crash Rate:	0.64	
17039	0026X - 1.50	Int of CUMMINGS ST WASHINGTON AV	2	2	0	0	1	0	1	50.0	6.933	0.10	0.29	0.00
												Statewide Crash Rate:	0.12	
17043	0026X - 1.70	Int of E KIDDER ST W KIDDER ST WASHINGTON AV	2	7	0	1	0	3	3	57.1	6.975	0.33	0.29	1.15
												Statewide Crash Rate:	0.12	
P17040	0026X - 1.56	Int of OAKLEY ST WASHINGTON AV	2	3	0	0	0	1	2	33.3	6.761	0.15	0.29	0.00
												Statewide Crash Rate:	0.12	
17045	0026X - 1.88	Int of OCEAN AV WASHINGTON AV	9	21	0	0	1	3	16	20.0	8.242	0.85	1.03	0.82
												Statewide Crash Rate:	0.64	
A13532	0026X - 1.76	Int of FERNALD ST WASHINGTON AV	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.12	
17036	0026X - 1.27	Int of GALVIN ST WASHINGTON AV	2	6	0	1	0	1	4	33.3	8.966	0.22	0.27	0.00
												Statewide Crash Rate:	0.12	
17041	0026X - 1.60	Int of ALTON ST WASHINGTON AV	2	0	0	0	0	0	0	0.0	6.553	0.00	0.30	0.00
												Statewide Crash Rate:	0.12	
17038	0026X - 1.41	Int of PRESUMPSCOT ST W PRESUMPSCOT ST WASHIN(	9	16	0	0	1	1	14	12.5	9.185	0.58	1.01	0.57
												Statewide Crash Rate:	0.64	
A13547	0026X - 1.55	Int of JOHANSEN ST, WASHINGTON AV	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.12	
17046	0026X - 1.98	Int of BYFIELD RD WASHINGTON AV	2	0	0	0	0	0	0	0.0	5.974	0.00	0.30	0.00
												Statewide Crash Rate:	0.12	
17037	0026X - 1.32	Int of RANDALL ST WASHINGTON AV	2	7	0	0	0	5	2	71.4	9.002	0.26	0.27	0.95
												Statewide Crash Rate:	0.12	
17042	0026X - 1.65	Int of INVERNESS ST WASHINGTON AV	2	0	0	0	0	0	0	0.0	6.698	0.00	0.29	0.00
												Statewide Crash Rate:	0.12	
13494	0009X - 64.09	Int of OCEAN AV ROSEDALE ST	2	1	0	0	0	1	0	100.0	3.047	0.11	0.36	0.00
												Statewide Crash Rate:	0.12	
13496	0009X - 64.15	Int of MURRAY ST OCEAN AV	2	1	0	0	1	0	0	100.0	2.855	0.12	0.37	0.00
												Statewide Crash Rate:	0.12	
13514	0009X - 64.22	Int of OCEAN AV PAYSON PARK DR	2	1	0	0	0	0	1	0.0	3.372	0.10	0.35	0.00
												Statewide Crash Rate:	0.12	
13498	0009X - 64.20	Int of OCEAN AV VICTOR RD	2	0	0	0	0	0	0	0.0	2.844	0.00	0.37	0.00
												Statewide Crash Rate:	0.12	
13490	0009X - 64	Int of BROOKSIDE RD OCEAN AV	2	0	0	0	0	0	0	0.0	2.517	0.00	0.38	0.00
												Statewide Crash Rate:	0.12	
71532	0009X - 64.08	Int of ARBORETUM RD OCEAN AV	2	3	0	0	0	1	2	33.3	2.844	0.35	0.37	0.00
												Statewide Crash Rate:	0.12	
13579	0009X - 64.58	Int of OCEAN AV PROVIDENCE ST	2	1	0	0	0	0	1	0.0	1.632	0.20	0.42	0.00
												Statewide Crash Rate:	0.12	

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
P13512	0009X - 64.63	Int of OCEAN AV RAINBOW MALL RD	2	2	0	0	0	0	2	0.0	1.311	0.51	0.44	1.15
												Statewide Crash Rate:	0.12	
13563	0009X - 64.51	Int of MORSE ST OCEAN AV	2	2	0	0	0	1	1	50.0	1.649	0.40	0.42	0.00
												Statewide Crash Rate:	0.12	
A13584	0009X - 64.64	Int of GRAFTON ST OCEAN AV	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.12	
12451	0009X - 64.47	Int of OCEAN AV, SLEMONS ST	2	0	0	0	0	0	0	0.0	1.500	0.00	0.43	0.00
												Statewide Crash Rate:	0.12	
P13572	0560753 - 0.11	Int of SHERWOOD ST VERANDA ST	2	0	0	0	0	0	0	0.0	1.890	0.00	0.41	0.00
												Statewide Crash Rate:	0.12	
13576	0560753 - 0.06	Int of PEMBROKE ST VERANDA ST	2	0	0	0	0	0	0	0.0	1.782	0.00	0.41	0.00
												Statewide Crash Rate:	0.12	
13567	0560753 - 0.04	Int of JORDAN ST, VERANDA ST	2	0	0	0	0	0	0	0.0	1.795	0.00	0.41	0.00
												Statewide Crash Rate:	0.12	
A17610	0560753 - 0.28	Int of HODGINS ST VERANDA ST	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.12	
17612	0560753 - 0.38	Int of FAYETTE ST HAWTHORNE ST VERANDA ST	2	0	0	0	0	0	0	0.0	1.558	0.00	0.43	0.00
												Statewide Crash Rate:	0.12	
17594	0560753 - 0.19	Int of DALTON ST VERANDA ST	2	0	0	0	0	0	0	0.0	1.457	0.00	0.43	0.00
												Statewide Crash Rate:	0.12	
17614	0560753 - 0.33	Int of ARCADIA ST FAIRFIELD ST VERANDA ST	2	1	0	0	0	1	0	100.0	1.677	0.20	0.42	0.00
												Statewide Crash Rate:	0.12	
P17609	0560753 - 0.29	Int of UPLAND AV, VERANDA ST	2	0	0	0	0	0	0	0.0	1.739	0.00	0.41	0.00
												Statewide Crash Rate:	0.12	
A70781	0560753 - 0.10	Int of SHERWOOD ST VERANDA ST	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.12	
17596	0560753 - 0.23	Int of KENSINGTON ST VERANDA ST	2	1	0	0	0	1	0	100.0	1.671	0.20	0.42	0.00
												Statewide Crash Rate:	0.12	
60334	0001S - 16.35	Int of RAMP ON FROM VERANDA ST VERANDA ST WORD	2	10	1	1	0	4	4	60.0	2.010	1.66	0.35	4.75
												Statewide Crash Rate:	0.10	
15786	0001X - 52.42	Int of OREGON ST VERANDA ST	2	2	0	0	0	1	1	50.0	4.144	0.16	0.33	0.00
												Statewide Crash Rate:	0.12	
15787	0001X - 52.33	Int of OLYMPIA ST VERANDA ST	2	2	0	0	0	0	2	0.0	3.044	0.22	0.36	0.00
												Statewide Crash Rate:	0.12	
69124	0001X - 52.50	Int of ENT TO MARTINS POINT VERANDA ST	9	2	0	0	1	0	1	50.0	4.875	0.14	1.14	0.00
												Statewide Crash Rate:	0.64	
74668	0001X - 52.27	Int of US 1 NB VERANDA ST	2	0	0	0	0	0	0	0.0	5.103	0.00	0.28	0.00
												Statewide Crash Rate:	0.10	
13554	0560037 - 0.04	Int of BATES CT BATES ST	2	0	0	0	0	0	0	0.0	2.461	0.00	0.38	0.00
												Statewide Crash Rate:	0.12	
13555	0560037 - 0.06	Non Int BATES ST	2	0	0	0	0	0	0	0.0	2.223	0.00	0.39	0.00
												Statewide Crash Rate:	0.12	
68336	0560037 - 0.07	Int of BATES ST BATES ST CUT	2	0	0	0	0	0	0	0.0	1.167	0.00	0.45	0.00
												Statewide Crash Rate:	0.12	

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
68338	0560037 - 0.09	Int of BATES ST RD INV 3209820	2	0	0	0	0	0	0	0.0	0.251	0.00	0.48	0.00
												Statewide Crash Rate:	0.12	
17592	3200512 - 0.10	Int of BATES ST CUT BAXTER BLVD CHAS LORING HWY	2	2	0	0	0	0	2	0.0	3.696	0.18	0.34	0.00
												Statewide Crash Rate:	0.12	
68337	3200512 - 0.02	Int of BATES ST CUT RD INV 3209820	2	0	0	0	0	0	0	0.0	0.920	0.00	0.48	0.00
												Statewide Crash Rate:	0.12	
18736	3201021 - 2.10	Int of CHAS LORING HWY CHAS LORING SB US 1 NB	2	0	0	0	0	0	0	0.0	1.830	0.00	0.41	0.00
												Statewide Crash Rate:	0.12	
18683	3201022 - 0.05	Int of BATES ST CHAS LORING SB US 1 NB	2	4	0	0	0	0	4	0.0	2.699	0.49	0.32	1.52
												Statewide Crash Rate:	0.10	
73046	3209819 - 0.02	Non Int BATES ST	2	0	0	0	0	0	0	0.0	1.043	0.00	0.46	0.00
												Statewide Crash Rate:	0.12	
13575	0560599 - 0.18	Int of PRESUMPSCOT ST SAVOY ST	2	0	0	0	0	0	0	0.0	2.558	0.00	0.38	0.00
												Statewide Crash Rate:	0.12	
13571	0560599 - 0.23	Int of PRESUMPSCOT ST SHERWOOD ST	2	5	0	0	0	0	5	0.0	2.735	0.61	0.37	1.64
												Statewide Crash Rate:	0.12	
17588	0560599 - 0.52	Non Int PRESUMPSCOT ST	2	0	0	0	0	0	0	0.0	1.686	0.00	0.42	0.00
												Statewide Crash Rate:	0.12	
17586	0560599 - 0.46	Int of GRAFTON ST PRESUMPSCOT ST	2	0	0	0	0	0	0	0.0	1.838	0.00	0.41	0.00
												Statewide Crash Rate:	0.12	
13581	0560599 - 0.40	Int of PRESUMPSCOT ST PROVIDENCE ST	2	1	0	0	0	0	1	0.0	2.153	0.15	0.39	0.00
												Statewide Crash Rate:	0.12	
13557	0560599 - 0.34	Int of BERKSHIRE RD PRESUMPSCOT ST	2	0	0	0	0	0	0	0.0	2.301	0.00	0.39	0.00
												Statewide Crash Rate:	0.12	
13573	3209966 - 0.14	End of SHERWOOD ST	2	0	0	0	0	0	0	0.0	0.035	0.00	-1.92	0.00
												Statewide Crash Rate:	0.12	
Study Years:	3.00	**NODE TOTALS:**		130	1	3	7	28	89	30.0	188.120	0.23	0.26	0.89

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
17036	18737	3123985	0 - 0.06	0026X - 1.21	0.06	2	8	0	0	2	1	5	37.5	0.00532	501.51	435.38	1.15
Int of GALVIN ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
17036	17037	3120740	0 - 0.05	0026X - 1.27	0.05	2	4	0	0	0	1	3	25.0	0.00450	296.57	454.10	0.00
Int of GALVIN ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
13583	17037	3123939	0 - 0.03	0026X - 1.32	0.03	2	5	0	0	0	0	5	0.0	0.00267	624.59	519.22	1.20
Int of CHURCHILL ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
13583	17038	3130464	0 - 0.06	0026X - 1.35	0.06	2	4	0	0	0	1	3	25.0	0.00524	254.42	436.96	0.00
Int of CHURCHILL ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
17038	17039	3129290	0 - 0.09	0026X - 1.41	0.09	2	9	0	0	1	1	6	25.0	0.00625	480.15	418.41	1.15
Int of PRESUMPSCOT ST W PRESUMPSCOT ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
13547	17039	188353	0 - 0.05	0026X - 1.50	0.05	2	3	0	1	0	1	1	66.7	0.00344	290.66	486.20	0.00
Int of JOHANSEN ST, WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
13547	17040	3130189	0 - 0.01	0026X - 1.55	0.01	2	0	0	0	0	0	0	0.0	0.00067	0.00	726.09	0.00
Int of JOHANSEN ST, WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
17040	17041	3122273	0 - 0.04	0026X - 1.56	0.04	2	2	0	0	0	0	2	0.0	0.00258	258.86	524.02	0.00
Int of OAKLEY ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
17041	17042	3117949	0 - 0.05	0026X - 1.60	0.05	2	1	0	0	0	0	1	0.0	0.00331	100.74	491.11	0.00
Int of ALTON ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
17042	17043	3117950	0 - 0.05	0026X - 1.65	0.05	2	0	0	0	0	0	0	0.0	0.00335	0.00	489.59	0.00
Int of INVERNESS ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
17043	17044	3122274	0 - 0.05	0026X - 1.70	0.05	2	1	0	0	0	0	1	0.0	0.00350	95.33	484.17	0.00
Int of E KIDDER ST W KIDDER ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
13532	17044	3123712	0 - 0.01	0026X - 1.75	0.01	2	0	0	0	0	0	0	0.0	0.00068	0.00	724.31	0.00
Int of FERNALD ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
13532	17045	3120381	0 - 0.12	0026X - 1.76	0.12	2	7	0	0	1	1	5	28.6	0.00795	293.67	394.95	0.74
Int of FERNALD ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
17045	17046	3122275	0 - 0.10	0026X - 1.88	0.10	2	12	0	0	1	2	9	25.0	0.00594	673.57	423.65	1.59
Int of OCEAN AV WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
13490	71532	4047222	0 - 0.08	0009X - 64	0.08	2	0	0	0	0	0	0	0.0	0.00195	0.00	490.54	0.00
Int of BROOKSIDE RD OCEAN AV				ST RTE 9											Statewide Crash Rate: 155.59		
71532	13494	4047090	0 - 0.01	0009X - 64.08	0.01	2	0	0	0	0	0	0	0.0	0.00033	0.00	671.81	0.00
Int of ARBORETUM RD OCEAN AV				ST RTE 9											Statewide Crash Rate: 155.59		
13494	13496	3118903	0 - 0.06	0009X - 64.09	0.06	2	0	0	0	0	0	0	0.0	0.00165	0.00	511.05	0.00
Int of OCEAN AV ROSEDALE ST				ST RTE 9											Statewide Crash Rate: 155.59		
13496	13498	3131557	0 - 0.05	0009X - 64.15	0.05	2	2	0	0	0	1	1	50.0	0.00139	479.39	533.21	0.00
Int of MURRAY ST OCEAN AV				ST RTE 9											Statewide Crash Rate: 155.59		
13498	13514	188273	0 - 0.02	0009X - 64.20	0.02	2	0	0	0	0	0	0	0.0	0.00054	0.00	644.44	0.00
Int of OCEAN AV VICTOR RD				ST RTE 9											Statewide Crash Rate: 155.59		

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
13514	17045	3131558	0 - 0.16	0009X - 64.22	0.16	2	9	0	0	0	1	7	12.5	0.00385	779.51	411.32	1.90
Int of OCEAN AV PAYSON PARK DR				ST RTE 9											Statewide Crash Rate: 155.59		
12451	17045	3119184	0 - 0.09	0009X - 64.38	0.09	2	0	0	0	0	0	0	0.0	0.00137	0.00	535.47	0.00
Int of OCEAN AV, SLEMONS ST				ST RTE 9											Statewide Crash Rate: 155.59		
12451	13563	3119183	0 - 0.04	0009X - 64.47	0.04	2	0	0	0	0	0	0	0.0	0.00058	0.00	639.34	0.00
Int of OCEAN AV, SLEMONS ST				ST RTE 9											Statewide Crash Rate: 155.59		
13563	13579	3131561	0 - 0.07	0009X - 64.51	0.07	2	0	0	0	0	0	0	0.0	0.00114	0.00	558.28	0.00
Int of MORSE ST OCEAN AV				ST RTE 9											Statewide Crash Rate: 155.59		
13512	13579	3122200	0 - 0.05	0009X - 64.58	0.05	2	2	0	0	0	0	2	0.0	0.00076	872.45	608.59	1.43
Int of OCEAN AV RAINBOW MALL RD				ST RTE 9											Statewide Crash Rate: 155.59		
13512	13584	188291	0 - 0.01	0009X - 64.63	0.01	2	0	0	0	0	0	0	0.0	0.00016	0.00	584.63	0.00
Int of OCEAN AV RAINBOW MALL RD				ST RTE 9											Statewide Crash Rate: 155.59		
13567	18737	3106268	0 - 0.04	0560753 - 0	0.04	2	1	0	0	0	0	1	0.0	0.00070	475.65	618.54	0.00
Int of JORDAN ST, VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
13567	13576	188382	0 - 0.02	0560753 - 0.04	0.02	2	0	0	0	0	0	0	0.0	0.00037	0.00	669.99	0.00
Int of JORDAN ST, VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
70781	13576	3936420	0 - 0.04	0560753 - 0.06	0.04	2	1	0	0	0	0	1	0.0	0.00067	495.79	623.15	0.00
Int of SHERWOOD ST VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
13572	70781	3936419	0 - 0.01	0560753 - 0.10	0.01	2	0	0	0	0	0	0	0.0	0.00018	0.00	618.07	0.00
Int of SHERWOOD ST VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
13572	17594	3123938	0 - 0.08	0560753 - 0.11	0.08	2	1	0	0	1	0	0	100.0	0.00119	280.27	553.39	0.00
Int of SHERWOOD ST VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
17594	17596	193314	0 - 0.04	0560753 - 0.19	0.04	2	0	0	0	0	0	0	0.0	0.00056	0.00	642.12	0.00
Int of DALTON ST VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
17596	17610	3106608	0 - 0.05	0560753 - 0.23	0.05	2	0	0	0	0	0	0	0.0	0.00086	0.00	594.58	0.00
Int of KENSINGTON ST VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
17609	17610	3106609	0 - 0.01	0560753 - 0.28	0.01	2	0	0	0	0	0	0	0.0	0.00016	0.00	588.07	0.00
Int of UPLAND AV, VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
17609	17614	3130048	0 - 0.04	0560753 - 0.29	0.04	2	0	0	0	0	0	0	0.0	0.00064	0.00	627.67	0.00
Int of UPLAND AV, VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
17612	17614	3122281	0 - 0.05	0560753 - 0.33	0.05	2	0	0	0	0	0	0	0.0	0.00076	0.00	609.48	0.00
Int of FAYETTE ST HAWTHORNE ST VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
60334	17612	5402045	0 - 0.02	0560753 - 0.38	0.02	2	0	0	0	0	0	0	0.0	0.00029	0.00	670.69	0.00
Int of RAMP ON FROM VERANDA ST VERANDA ST WORDSWORTH ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
60334	17612	5402045	0.02 - 0.05	0560753 - 0.38	0.03	2	1	0	0	0	0	0	0.0	0.00044	754.25	660.92	1.14
Int of RAMP ON FROM VERANDA ST VERANDA ST WORDSWORTH ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
74668	60334	5402069	0 - 0.04	0001S - 16.28	0.04	2	0	0	0	0	0	0	0.0	0.00095	0.00	581.51	0.00
Int of US 1 NB VERANDA ST				US 1 SB											Statewide Crash Rate: 155.59		

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
74668	60334	5402069	0.04 - 0.07	0001S - 16.32	0.03	2	0	0	0	0	0	0	0.0	0.00072	0.00	616.20	0.00
Int of US 1 NB VERANDA ST				US 1 SB											Statewide Crash Rate: 155.59		
15787	74668	5402070	0 - 0.06	0001X - 52.27	0.06	2	1	0	0	0	0	1	0.0	0.00181	184.49	499.79	0.00
Int of OLYMPIA ST VERANDA ST				US 1											Statewide Crash Rate: 155.59		
15786	15787	5402071	0 - 0.09	0001X - 52.33	0.09	2	0	0	0	0	0	0	0.0	0.00260	0.00	455.53	0.00
Int of OREGON ST VERANDA ST				US 1											Statewide Crash Rate: 155.59		
69124	15786	3509045	0 - 0.08	0001X - 52.42	0.08	2	0	0	0	0	0	0	0.0	0.00423	0.00	401.36	0.00
Int of ENT TO MARTINS POINT VERANDA ST				US 1											Statewide Crash Rate: 155.59		
13554	18737	3131559	0 - 0.04	0560037 - 0	0.04	2	0	0	0	0	0	0	0.0	0.00095	0.00	581.88	0.00
Int of BATES CT BATES ST				RD INV 05 60037											Statewide Crash Rate: 155.59		
13554	13555	3139091	0 - 0.02	0560037 - 0.04	0.02	2	0	0	0	0	0	0	0.0	0.00047	0.00	656.39	0.00
Int of BATES CT BATES ST				RD INV 05 60037											Statewide Crash Rate: 155.59		
13555	68336	3503103	0 - 0.01	0560037 - 0.06	0.01	2	0	0	0	0	0	0	0.0	0.00012	0.00	444.66	0.00
Non Int BATES ST				RD INV 05 60037											Statewide Crash Rate: 155.59		
68336	68338	3503129	0 - 0.02	0560037 - 0.07	0.02	2	0	0	0	0	0	0	0.0	0.00005	0.00	-577.91	0.00
Int of BATES ST BATES ST CUT				RD INV 05 60037											Statewide Crash Rate: 155.59		
68338	18683	3503130	0 - 0.02	0560037 - 0.09	0.02	2	0	0	0	0	0	0	0.0	0.00005	0.00	-548.10	0.00
Int of BATES ST RD INV 3209820				RD INV 05 60037											Statewide Crash Rate: 155.59		
68336	68337	3503127	0 - 0.02	3200512 - 0	0.02	2	0	0	0	0	0	0	0.0	0.00018	0.00	617.37	0.00
Int of BATES ST BATES ST CUT				RD INV 3200512											Statewide Crash Rate: 155.59		
68337	17592	3503128	0 - 0.08	3200512 - 0.02	0.08	2	0	0	0	0	0	0	0.0	0.00075	0.00	611.15	0.00
Int of BATES ST CUT RD INV 3209820				RD INV 3200512											Statewide Crash Rate: 155.59		
17592	18736	3119268	0 - 0.04	3201021 - 2.06	0.04	2	0	0	0	0	0	0	0.0	0.00092	0.00	586.34	0.00
Int of BATES ST CUT BAXTER BLVD CHAS LORING HWY				RD INV 3201021											Statewide Crash Rate: 155.59		
18683	18736	2074332	0 - 0.05	3201022 - 0	0.05	2	1	0	0	1	0	0	100.0	0.00081	413.42	602.21	0.00
Int of BATES ST CHAS LORING SB US 1 NB				RD INV 3201022											Statewide Crash Rate: 155.59		
18683	73046	4352985	0 - 0.02	3209819 - 0	0.02	2	0	0	0	0	0	0	0.0	0.00021	0.00	641.04	0.00
Int of BATES ST CHAS LORING SB US 1 NB				RD INV 3209819											Statewide Crash Rate: 155.59		
73046	13555	4352986	0 - 0.04	3209819 - 0.02	0.04	2	0	0	0	0	0	0	0.0	0.00042	0.00	664.36	0.00
Non Int BATES ST				RD INV 3209819											Statewide Crash Rate: 155.59		
13575	17038	3106271	0 - 0.06	0560599 - 0.12	0.06	2	4	0	0	0	0	4	0.0	0.00153	872.25	521.05	1.67
Int of PRESUMPSCOT ST SAVOY ST				RD INV 05 60599											Statewide Crash Rate: 155.59		
13571	13575	3106269	0 - 0.05	0560599 - 0.18	0.05	2	0	0	0	0	0	0	0.0	0.00125	0.00	546.99	0.00
Int of PRESUMPSCOT ST SHERWOOD ST				RD INV 05 60599											Statewide Crash Rate: 155.59		
13557	13571	3106267	0 - 0.11	0560599 - 0.23	0.11	2	4	0	0	0	0	4	0.0	0.00246	541.65	461.79	1.17
Int of BERKSHIRE RD PRESUMPSCOT ST				RD INV 05 60599											Statewide Crash Rate: 155.59		
13557	13581	3131560	0 - 0.06	0560599 - 0.34	0.06	2	0	0	0	0	0	0	0.0	0.00138	0.00	534.42	0.00
Int of BERKSHIRE RD PRESUMPSCOT ST				RD INV 05 60599											Statewide Crash Rate: 155.59		
13581	17586	3106272	0 - 0.06	0560599 - 0.40	0.06	2	2	0	0	0	1	1	50.0	0.00115	580.83	557.96	1.04
Int of PRESUMPSCOT ST PROVIDENCE ST				RD INV 05 60599											Statewide Crash Rate: 155.59		

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
17586	17588	3106607	0 - 0.06	0560599 - 0.46	0.06	2	2	0	0	0	0	2	0.0	0.00101	658.90	574.08	1.15
Int of GRAFTON ST	PRESUMPSCOT ST			RD INV 05 60599											Statewide Crash Rate: 155.59		
70781	13573	5080143	0 - 0.14	3209966 - 0	0.14	2	1	0	0	0	0	1	0.0	0.00010	3433.24	1378.74	2.49
Int of SHERWOOD ST	VERANDA ST			RD INV3209966											Statewide Crash Rate: 334.56		
Study Years:	3.00			**Section Totals:**	3.04		88	0	1	7	11	66	21.6	0.10002	293.28	233.67	1.26
				Grand Totals:	3.04		218	1	4	14	39	155	26.6	0.10002	726.52	338.49	2.15

Crash Summary

Section Details														
Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
17036	18737	3123985	0 - 0.06	0026X - 1.21	8	0	0	2	1	5	2022-31026	10/26/2022	1.22	PD
											2020-19629	08/18/2020	1.23	PD
											2022-10613	03/31/2022	1.23	PD
											2021-30654	11/08/2021	1.23	PD
											2020-16740	06/20/2020	1.24	PD
											2021-7801	03/28/2021	1.25	B
											2022-6794	02/27/2022	1.25	C
											2021-24542	09/15/2021	1.26	B
17036	17037	3120740	0 - 0.05	0026X - 1.27	4	0	0	0	1	3	2022-11713	04/26/2022	1.29	PD
											2020-570	01/08/2020	1.29	PD
											2022-19241	07/08/2022	1.29	PD
											2021-10548	05/02/2021	1.31	C
13583	17037	3123939	0 - 0.03	0026X - 1.32	5	0	0	0	0	5	2021-23522	09/05/2021	1.33	PD
											2020-24631	10/14/2020	1.34	PD
											2022-18638	07/05/2022	1.34	PD
											2021-27480	10/13/2021	1.34	PD
											2021-35328	12/14/2021	1.34	PD
13583	17038	3130464	0 - 0.06	0026X - 1.35	4	0	0	0	1	3	2020-8325	03/17/2020	1.38	PD
											2021-1283	01/08/2021	1.39	PD
											2021-14548	06/13/2021	1.40	C
											2022-95	01/04/2022	1.40	PD
17038	17039	3129290	0 - 0.09	0026X - 1.41	9	0	0	1	1	6	2020-5795	01/24/2020	1.43	PD
											2021-5642	03/02/2021	1.44	PD
											2021-28981	10/26/2021	1.44	PD
											2021-3581	02/09/2021	1.45	PD
											2022-19230	07/09/2022	1.46	B
											2022-31358	10/28/2022	1.46	C
											2020-577	01/08/2020	1.46	PD
											2022-37357	12/15/2022	1.48	
											2022-15896	06/08/2022	1.48	PD
13547	17039	188353	0 - 0.05	0026X - 1.50	3	0	1	0	1	1	2022-20681	07/23/2022	1.52	C
											2022-26880	09/16/2022	1.53	A
											2021-31682	11/12/2021	1.53	PD

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
13547	17040	3130189	0 - 0.01	0026X - 1.55	0	0	0	0	0	0				
17040	17041	3122273	0 - 0.04	0026X - 1.56	2	0	0	0	0	2	2021-33246	11/24/2021	1.57	PD
											2021-10804	04/12/2021	1.59	PD
17041	17042	3117949	0 - 0.05	0026X - 1.60	1	0	0	0	0	1	2022-24535	08/27/2022	1.64	PD
17042	17043	3117950	0 - 0.05	0026X - 1.65	0	0	0	0	0	0				
17043	17044	3122274	0 - 0.05	0026X - 1.70	1	0	0	0	0	1	2020-1425	01/15/2020	1.74	PD
13532	17044	3123712	0 - 0.01	0026X - 1.75	0	0	0	0	0	0				
13532	17045	3120381	0 - 0.12	0026X - 1.76	7	0	0	1	1	5	2020-3007	01/26/2020	1.79	PD
											2020-19019	08/10/2020	1.80	PD
											2022-26242	09/15/2022	1.83	C
											2021-27342	10/08/2021	1.83	PD
											2020-15032	06/25/2020	1.84	PD
											2022-8648	03/16/2022	1.85	B
											2021-2870	01/27/2021	1.87	PD
17045	17046	3122275	0 - 0.10	0026X - 1.88	12	0	0	1	2	9	2020-22434	09/19/2020	1.89	PD
											2021-11755	05/17/2021	1.89	PD
											2021-21220	08/13/2021	1.91	C
											2020-27004	11/05/2020	1.91	PD
											2020-19456	08/17/2020	1.91	PD
											2022-22921	08/14/2022	1.91	PD
											2022-34236	11/15/2022	1.91	PD
											2020-284	01/04/2020	1.91	PD
											2022-12824	05/06/2022	1.91	PD
											2021-17026	06/21/2021	1.92	PD
											2020-13567	06/08/2020	1.93	C
											2020-30644	12/07/2020	1.97	B
13490	71532	4047222	0 - 0.08	0009X - 64	0	0	0	0	0	0				
71532	13494	4047090	0 - 0.01	0009X - 64.08	0	0	0	0	0	0				
13494	13496	3118903	0 - 0.06	0009X - 64.09	0	0	0	0	0	0				
13496	13498	3131557	0 - 0.05	0009X - 64.15	2	0	0	0	1	1	2021-28907	10/25/2021	64.17	C
											2021-32647	11/23/2021	64.19	PD
13498	13514	188273	0 - 0.02	0009X - 64.20	0	0	0	0	0	0				

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
13514	17045	3131558	0 - 0.16	0009X - 64.22	9	0	0	0	1	7	2022-3208	01/31/2022	64.26	PD
											2022-26088	09/14/2022	64.35	PD
											2021-19301	07/27/2021	64.35	PD
											2021-16501	07/01/2021	64.35	PD
											2022-31649	09/23/2022	64.35	PD
											2021-21370	08/09/2021	64.37	
											2021-7238	03/20/2021	64.37	C
											2022-14394	05/26/2022	64.37	PD
											2022-4712	02/10/2022	64.37	PD
12451	17045	3119184	0 - 0.09	0009X - 64.38	0	0	0	0	0	0				
12451	13563	3119183	0 - 0.04	0009X - 64.47	0	0	0	0	0	0				
13563	13579	3131561	0 - 0.07	0009X - 64.51	0	0	0	0	0	0				
13512	13579	3122200	0 - 0.05	0009X - 64.58	2	0	0	0	0	2	2021-7927	03/29/2021	64.59	PD
											2021-10696	05/04/2021	64.60	PD
13512	13584	188291	0 - 0.01	0009X - 64.63	0	0	0	0	0	0				
13567	18737	3106268	0 - 0.04	0560753 - 0	1	0	0	0	0	1	2020-4178	02/06/2020	0.03	PD
13567	13576	188382	0 - 0.02	0560753 - 0.04	0	0	0	0	0	0				
70781	13576	3936420	0 - 0.04	0560753 - 0.06	1	0	0	0	0	1	2022-21589	08/01/2022	0.08	PD
13572	70781	3936419	0 - 0.01	0560753 - 0.10	0	0	0	0	0	0				
13572	17594	3123938	0 - 0.08	0560753 - 0.11	1	0	0	1	0	0	2021-30986	11/10/2021	0.16	B
17594	17596	193314	0 - 0.04	0560753 - 0.19	0	0	0	0	0	0				
17596	17610	3106608	0 - 0.05	0560753 - 0.23	0	0	0	0	0	0				
17609	17610	3106609	0 - 0.01	0560753 - 0.28	0	0	0	0	0	0				
17609	17614	3130048	0 - 0.04	0560753 - 0.29	0	0	0	0	0	0				
17612	17614	3122281	0 - 0.05	0560753 - 0.33	0	0	0	0	0	0				
60334	17612	5402045	0 - 0.02	0560753 - 0.38	0	0	0	0	0	0				
60334	17612	5402045	0.02 - 0.05	0560753 - 0.38	1	0	0	0	0	0	2022-30998	10/27/2022	0.40	
74668	60334	5402069	0.04 - 0.07	0001S - 16.28	0	0	0	0	0	0				
74668	60334	5402069	0 - 0.04	0001S - 16.28	0	0	0	0	0	0				
15787	74668	5402070	0 - 0.06	0001X - 52.27	1	0	0	0	0	1	2021-29118	10/26/2021	52.28	PD
15786	15787	5402071	0 - 0.09	0001X - 52.33	0	0	0	0	0	0				
69124	15786	3509045	0 - 0.08	0001X - 52.42	0	0	0	0	0	0				
13554	18737	3131559	0 - 0.04	0560037 - 0	0	0	0	0	0	0				
13554	13555	3139091	0 - 0.02	0560037 - 0.04	0	0	0	0	0	0				
13555	68336	3503103	0 - 0.01	0560037 - 0.06	0	0	0	0	0	0				
68336	68338	3503129	0 - 0.02	0560037 - 0.07	0	0	0	0	0	0				
68338	18683	3503130	0 - 0.02	0560037 - 0.09	0	0	0	0	0	0				

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
68336	68337	3503127	0 - 0.02	3200512 - 0	0	0	0	0	0	0				
68337	17592	3503128	0 - 0.08	3200512 - 0.02	0	0	0	0	0	0				
17592	18736	3119268	0 - 0.04	3201021 - 2.06	0	0	0	0	0	0				
18683	18736	2074332	0 - 0.05	3201022 - 0	1	0	0	1	0	0	2020-23256	09/29/2020	0.01	B
18683	73046	4352985	0 - 0.02	3209819 - 0	0	0	0	0	0	0				
73046	13555	4352986	0 - 0.04	3209819 - 0.02	0	0	0	0	0	0				
13575	17038	3106271	0 - 0.06	0560599 - 0.12	4	0	0	0	0	4	2020-2143	01/17/2020	0.12	PD
											2020-26110	10/30/2020	0.15	PD
											2021-20907	08/12/2021	0.15	PD
											2021-4517	02/20/2021	0.15	PD
13571	13575	3106269	0 - 0.05	0560599 - 0.18	0	0	0	0	0	0				
13557	13571	3106267	0 - 0.11	0560599 - 0.23	4	0	0	0	0	4	2020-474	01/07/2020	0.28	PD
											2022-34548	11/22/2022	0.31	PD
											2022-30031	10/19/2022	0.31	PD
											2021-23912	09/09/2021	0.33	PD
13557	13581	3131560	0 - 0.06	0560599 - 0.34	0	0	0	0	0	0				
13581	17586	3106272	0 - 0.06	0560599 - 0.40	2	0	0	0	1	1	2022-37245	12/14/2022	0.43	PD
											2022-21108	07/27/2022	0.44	C
17586	17588	3106607	0 - 0.06	0560599 - 0.46	2	0	0	0	0	2	2021-3209	02/06/2021	0.48	PD
											2020-19666	08/19/2020	0.48	PD
70781	13573	5080143	0 - 0.14	3209966 - 0	1	0	0	0	0	1	2020-8326	03/17/2020	0.02	PD
				Totals:	88	0	1	7	11	66				

Crash Summary II - Characteristics

Crashes by Day and Hour

	AM												Hour of Day PM													
Day Of Week	**12**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**Un**	**Tot**
SUNDAY	1	0	0	0	0	0	0	0	1	2	0	3	1	1	3	1	1	2	3	0	2	0	0	0	0	21
MONDAY	0	0	0	0	0	0	1	1	4	2	2	2	1	3	4	2	3	2	0	0	1	0	0	0	0	28
TUESDAY	0	0	0	0	0	0	4	3	0	1	4	3	3	4	2	4	3	5	4	2	1	0	0	1	0	44
WEDNESDAY	0	0	0	0	0	0	2	1	5	1	0	2	8	3	3	3	4	5	1	1	0	1	0	1	0	41
THURSDAY	1	0	0	1	1	0	1	3	3	2	2	0	0	2	3	3	0	5	0	1	1	0	1	0	0	30
FRIDAY	0	0	0	0	0	0	0	2	6	0	1	3	0	0	1	5	3	3	3	2	0	0	1	0	0	30
SATURDAY	0	0	0	0	1	0	0	0	0	2	2	2	1	3	3	3	2	1	1	0	1	1	1	0	0	24
Totals	2	0	0	1	2	0	8	10	19	10	11	15	14	16	19	21	16	23	12	6	6	2	3	2	0	**218**

Vehicle Counts by Type

Unit Type	Total	Unit Type	Total
1-Passenger Car	211	23-Bicyclist	8
2-(Sport) Utility Vehicle	131	24-Witness	33
3-Passenger Van	3	25-Other	8
4-Cargo Van (10K lbs or Less)	4	26-Construction	1
5-Pickup	38	27-Farm Vehicle	0
6-Motor Home	0	28-Horse and Buggy	0
7-School Bus	1	**Total**	**455**
8-Transit Bus	0		
9-Motor Coach	0		
10-Other Bus	0		
11-Motorcycle	1		
12-Moped	1		
13-Low Speed Vehicle	0		
14-Autocycle	0		
15-Experimental	0		
16-Other Light Trucks (10,000 lbs or Less)	2		
17-Medium/Heavy Trucks (More than 10,000 lbs)	13		
18-ATV - (4 wheel)	0		
20-ATV - (2 wheel)	0		
21-Snowmobile	0		
22-Pedestrian	0		

Crash Summary II - Characteristics

Crashes by Driver Action at Time of Crash

Driver Action at Time of Crash	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
No Contributing Action	24	160	7	0	0	0	191
Ran Off Roadway	5	0	0	0	0	0	5
Failed to Yield Right-of-Way	59	4	0	0	0	0	63
Ran Red Light	3	0	0	0	0	0	3
Ran Stop Sign	5	0	0	0	0	0	5
Disregarded Other Traffic Sign	2	0	0	0	0	0	2
Disregarded Other Road Markings	0	0	0	0	0	0	0
Exceeded Posted Speed Limit	3	3	0	0	0	0	6
Drove Too Fast For Conditions	4	0	0	0	0	0	4
Improper Turn	4	0	0	0	0	0	4
Improper Backing	4	2	0	0	0	0	6
Improper Passing	5	1	0	0	0	0	6
Wrong Way	0	0	0	0	0	0	0
Followed Too Closely	53	4	0	0	0	0	57
Failed to Keep in Proper Lane	15	0	0	0	0	0	15
Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner	6	0	0	0	0	0	6
Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway	1	0	0	0	0	0	1
Over-Correcting/Over-Steering	3	0	0	0	0	0	3
Other Contributing Action	9	5	0	0	0	0	14
Unknown	1	1	0	0	0	0	2
Total	**206**	**180**	**7**	**0**	**0**	**0**	**393**

Crashes by Apparent Physical Condition And Driver

Apparent Physical Condition	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
Apparently Normal	193	176	7	0	0	8	384
Physically Impaired	0	0	0	0	0	0	0
Emotional(Depressed, Angry, Disturbed, etc.)	1	0	0	0	0	0	1
Ill (Sick)	1	0	0	0	0	0	1
Asleep or Fatigued	1	0	0	0	0	0	1
Under the Influence of Medications/Drugs/Alcohol	3	0	0	0	0	0	3
Other	2	4	0	0	0	0	6
Total	**201**	**180**	**7**	**0**	**0**	**8**	**396**

Driver Age by Unit Type

Age	Driver	Bicycle	SnowMobile	Pedestrian	ATV	Total
09-Under	1	0	0	0	0	1
10-14	0	0	0	0	0	0
15-19	34	0	0	0	0	34
20-24	44	0	0	0	0	44
25-29	45	0	0	0	0	45
30-39	87	0	0	0	0	87
40-49	70	0	0	0	0	70
50-59	40	0	0	0	0	40
60-69	41	0	0	0	0	41
70-79	21	0	0	0	0	21
80-Over	9	0	0	0	0	9
Unknown	22	8	0	0	0	30
Total	**414**	**8**	**0**	**0**	**0**	**422**

Crash Summary II - Characteristics

Most Harmful Event

Most Harmful Event	Total	Most Harmful Event	Total
1-Overturn / Rollover	1	38-Other Fixed Object (wall, building, tunnel, etc.)	1
2-Fire / Explosion	0	39-Unknown	15
3-Immersion	0	40-Gate or Cable	0
4-Jackknife	0	41-Pressure Ridge	0
5-Cargo / Equipment Loss Or Shift	0	**Total**	**407**
6-Fell / Jumped from Motor Vehicle	1		
7-Thrown or Falling Object	0		
8-Other Non-Collision	0		
9-Pedestrian	0		
10-Pedalcycle	1		
11-Railway Vehicle - Train, Engine	0		
12-Animal	0		
13-Motor Vehicle in Transport	373		
14-Parked Motor Vehicle	8		
15-Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle	1		
16-Work Zone / Maintenance Equipment	0		
17-Other Non-Fixed Object	0		
18-Impact Attenuator / Crash Cushion	0		
19-Bridge Overhead Structure	0		
20-Bridge Pier or Support	0		
21-Bridge Rail	0		
22-Cable Barrier	0		
23-Culvert	0		
24-Curb	0		
25-Ditch	0		
26-Embankment	0		
27-Guardrail Face	0		
28-Guardrail End	0		
29-Concrete Traffic Barrier	0		
30-Other Traffic Barrier	1		
31-Tree (Standing)	1		
32-Utility Pole / Light Support	4		
33-Traffic Sign Support	0		
34-Traffic Signal Support	0		
35-Fence	0		
36-Mailbox	0		
37-Other Post, Pole, or Support	0		

Injury Data

Severity Code	Injury Crashes	Number Of Injuries
K	1	1
A	4	4
B	14	19
C	39	58
PD	155	0
Total	**213**	**82**

Road Character

Road Grade	Total
1-Level	185
2-On Grade	33
3-Top of Hill	0
4-Bottom of Hill	0
5-Other	0
Total	**218**

Traffic Control Devices

Traffic Control Device	Total
1-Traffic Signals (Stop & Go)	74
2-Traffic Signals (Flashing)	2
3-Advisory/Warning Sign	2
4-Stop Signs - All Approaches	1
5-Stop Signs - Other	29
6-Yield Sign	3
7-Curve Warning Sign	1
8-Officer, Flagman, School Patrol	2
9-School Bus Stop Arm	0
10-School Zone Sign	1
11-R.R. Crossing Device	0
12-No Passing Zone	1
13-None	101
14-Other	1
Total	**218**

Light

Light Condition	Total
1-Daylight	173
2-Dawn	3
3-Dusk	3
4-Dark - Lighted	39
5-Dark - Not Lighted	0
6-Dark - Unknown Lighting	0
7-Unknown	0
Total	**218**

Crash Summary II - Characteristics

Crashes by Year and Month

Month	2020	2021	2022	Total
JANUARY	13	4	7	24
FEBRUARY	7	9	5	21
MARCH	6	5	6	17
APRIL	3	4	1	8
MAY	3	5	7	15
JUNE	8	7	2	17
JULY	9	6	8	23
AUGUST	9	5	7	21
SEPTEMBER	7	5	6	18
OCTOBER	10	10	7	27
NOVEMBER	1	6	6	13
DECEMBER	4	4	6	14
Total	**80**	**70**	**68**	**218**

Report is limited to the last 10 years of data.

Crash Summary II - Characteristics

Crashes by Crash Type and Type of Location

Crash Type	Straight Road	Curved Road	Three Leg Intersection	Four Leg Intersection	Five or More Leg Intersection	Driveways	Bridges	Interchanges	Other	Parking Lot	Private Way	Cross Over	Railroad Crossing	Traffic Circle-Roundabout	Total
Object in Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rear End - Sideswipe	38	0	19	44	0	3	0	0	0	0	0	0	0	0	104
Head-on - Sideswipe	2	0	1	0	0	0	0	0	0	0	0	0	0	0	3
Intersection Movement	0	0	22	26	0	31	0	0	0	0	0	0	0	0	79
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Train	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Went Off Road	8	0	5	6	0	1	0	0	0	0	0	0	0	0	20
All Other Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	1	0	2	3	0	2	0	0	0	0	0	0	0	0	8
Other	3	0	0	1	0	0	0	0	0	0	0	0	0	0	4
Jackknife	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rollover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Submersion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thrown or Falling Object	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**52**	**0**	**49**	**80**	**0**	**37**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**218**

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Blowing Sand, Soil, Dirt												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Blowing Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Clear												
Dark - Lighted	23	0	0	0	0	0	0	0	0	0	1	24
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	2	0	0	0	0	0	0	0	0	0	0	2
Daylight	118	2	0	0	0	0	0	1	0	0	8	129
Dusk	2	0	0	0	0	0	0	0	0	0	0	2
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Cloudy												
Dark - Lighted	2	0	0	0	0	0	0	0	0	0	2	4
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	1	1
Daylight	23	0	0	0	0	0	0	0	0	0	5	28
Dusk	0	0	0	0	0	0	0	0	0	0	1	1
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Fog, Smog, Smoke												
Dark - Lighted	1	0	0	0	0	0	0	0	0	0	0	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Other												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	1	0	0	1
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Rain												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	7	7
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	1	0	0	12	13
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Severe Crosswinds												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Sleet, Hail (Freezing Rain or Drizzle)												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Snow												
Dark - Lighted	0	0	0	0	0	0	0	3	0	0	0	3
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	1	0	0	1	2
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**171**	**2**	**0**	**0**	**0**	**0**	**0**	**6**	**1**	**0**	**38**	**218**

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

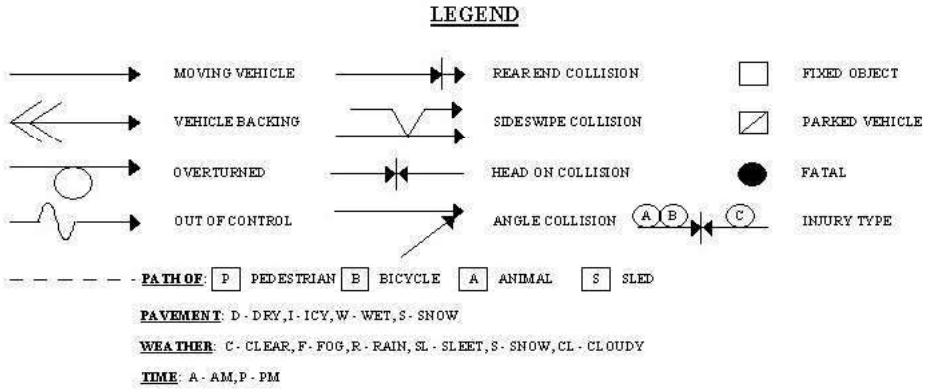
LOW NODE: **13514** HIGH NODE: **17045** REGION: **1** U/R: **URBAN**

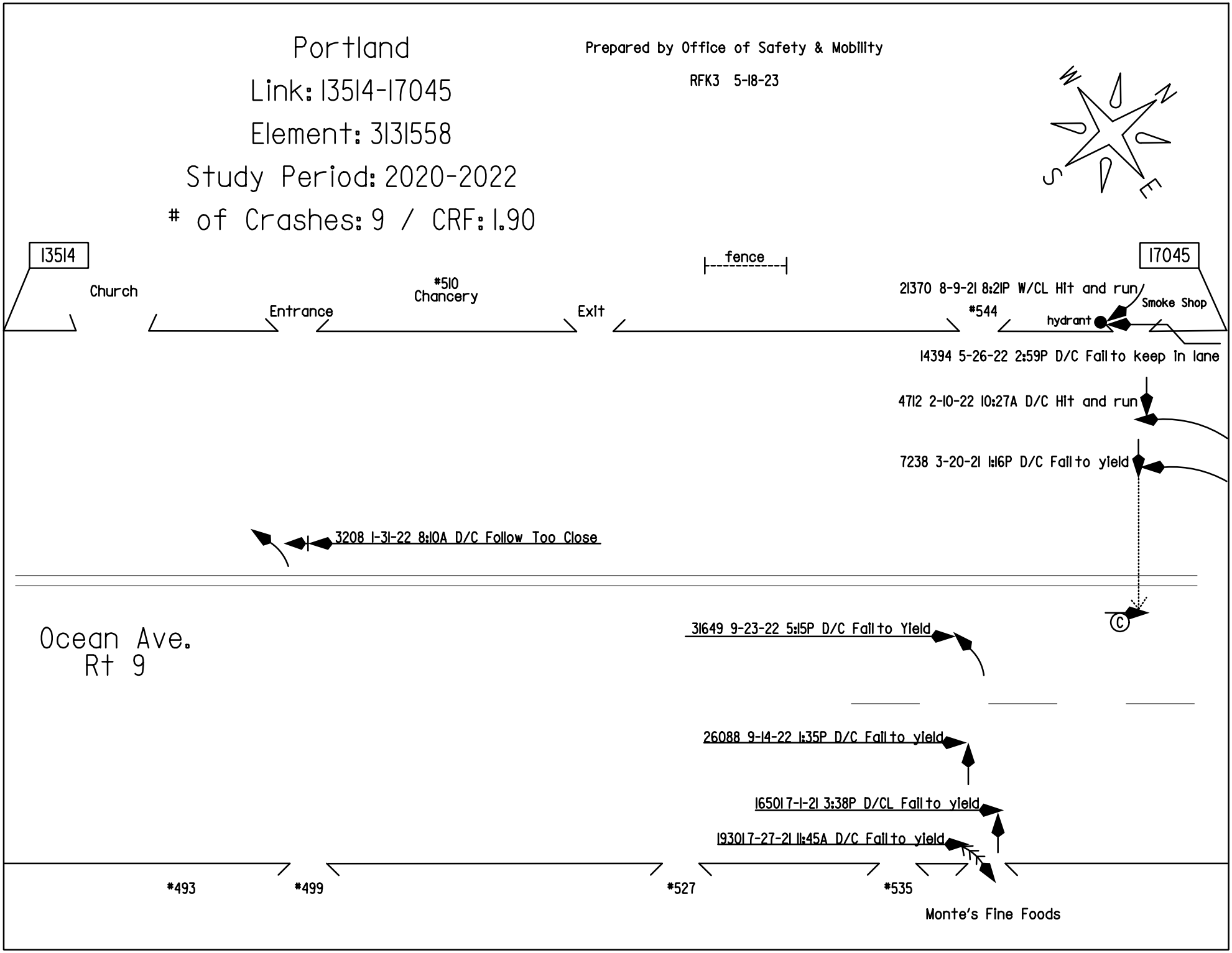
DESCRIPTION: **Ocean Ave from Catafalque Dr to Washington Ave**

RTE # / RD #: **0009X** DATE DRAWN: **5/18/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **779.51** CRF: **1.9** % INJURY: **11.1** TOTAL CRASHES: **9**




Portland
Link: 13514-17045
Element: 3131558
Study Period: 2020-2022
# of Crashes: 9 / CRF: 1.90
Prepared by Office of Safety & Mobility
RFK3 5-18-23
W
N
S
E
13514
17045
fence
Church
Entrance
#510
Chancery
Exit
21370 8-9-21 8:21P W/CL Hit and run
#544
hydrant
Smoke Shop
14394 5-26-22 2:59P D/C Fail to keep in lane
4712 2-10-22 10:27A D/C Hit and run
7238 3-20-21 1:16P D/C Fail to yield
3208 1-31-22 8:10A D/C Follow Too Close
Ocean Ave.
Rt 9
31649 9-23-22 5:15P D/C Fail to Yield
26088 9-14-22 1:35P D/C Fail to yield
16501 7-1-21 3:38P D/CL Fail to yield
19301 7-27-21 11:45A D/C Fail to yield
#493
#499
#527
#535
Monte's Fine Foods

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

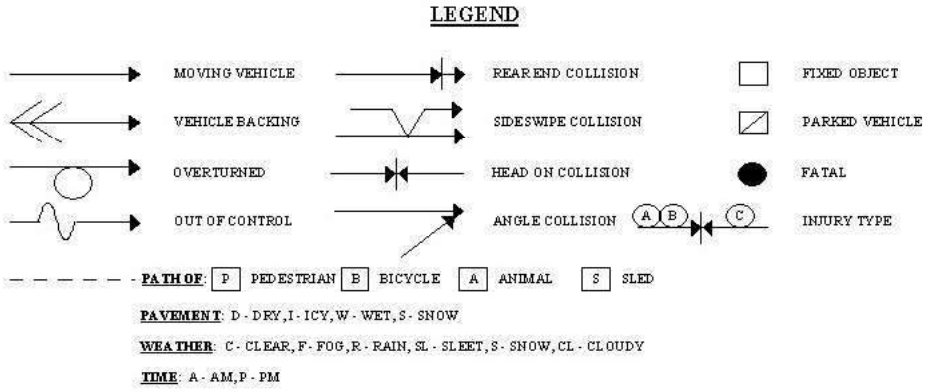
LOW NODE: **17036** HIGH NODE: **18737** REGION: **1** U/R: **URBAN**

DESCRIPTION: **Washington Ave from Galvin St to Bates St**

RTE # / RD #: **0026X** DATE DRAWN: **5/12/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **501.51** CRF: **1.15** % INJURY: **37.5** TOTAL CRASHES: **8**



Prepared by Office of Safety & Mobility

RFK3 5-12-23

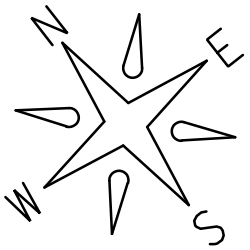
Portland

Link: 17036-18737

Element: 3123985

Study Period: 2020-2022

of Crashes: 8 / CRF: 1.15



17036

Driveway #521

18737

pole (B)

7801 3-28-21 9:00A D/CL Sick

6794 2-27-22 2:33P D/C Reckless driving (C)(C)(C)

19629 8-18-20 4:25P D/C Fail to Yield

30654 11-8-21 5:18P D/C Fail to Yield

31026 10-26-22 12:27P W/R Fail to yield

(B) 24542 9-15-21 12:21P D/CL Follow too close

laid down moped

10613 3-31-22 5:32P D/CL Fail to Yield

16740 6-20-20 10:30P D/C Hit and run

Washington Ave. (Rte. 26)

Driveway

Driveway

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

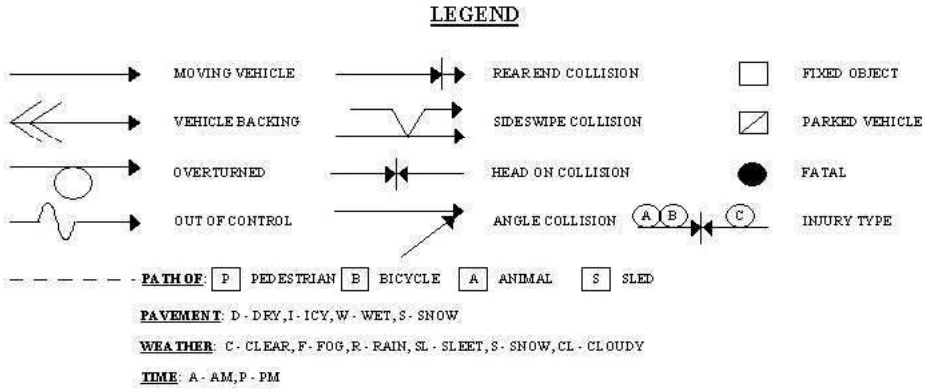
LOW NODE: **17038** HIGH NODE: **17039** REGION: **1** U/R: **URBAN**

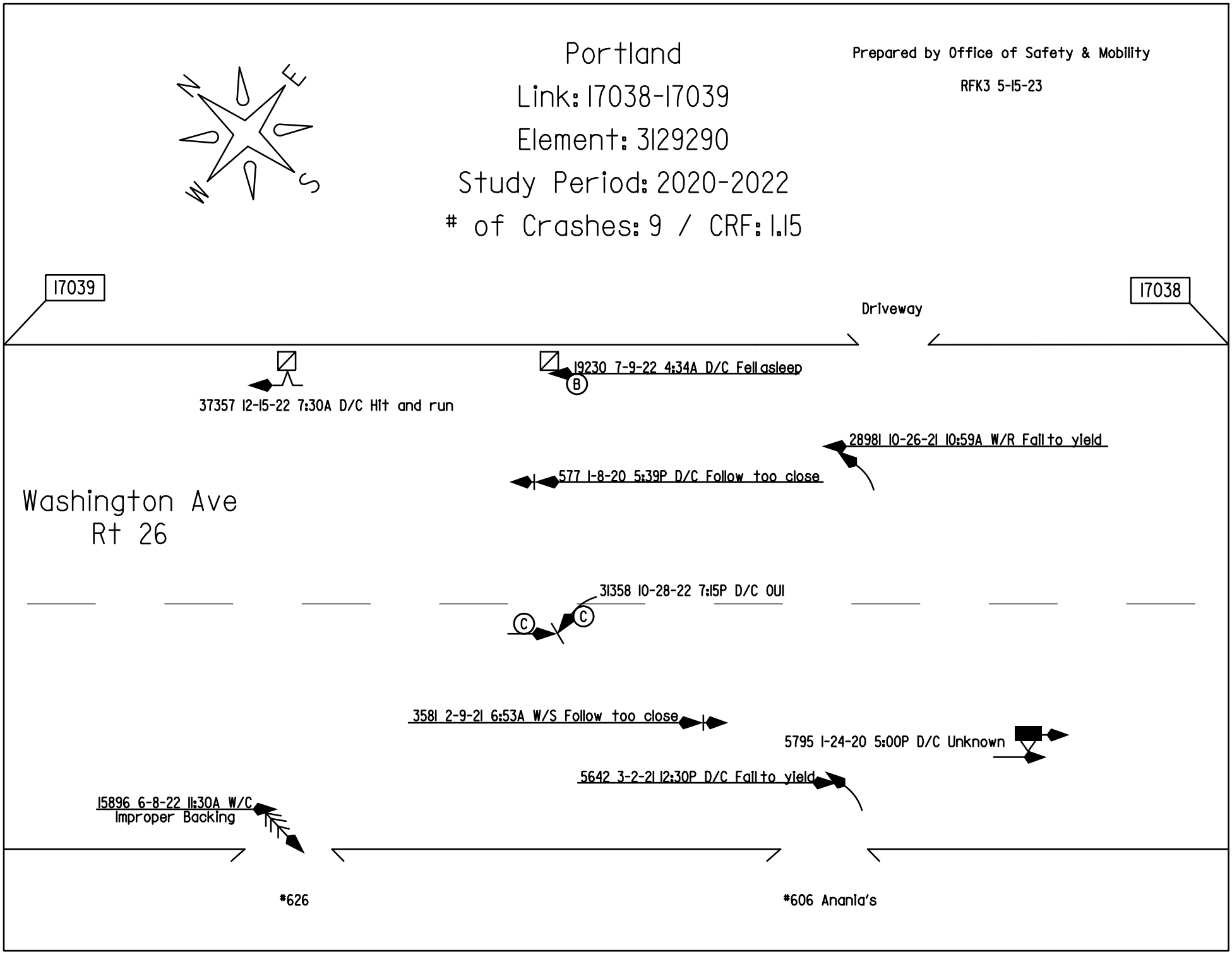
DESCRIPTION: **Washington Ave from Presumpscot St to Cummings**

RTE # / RD #: **0026X** DATE DRAWN: **5/15/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **480.15** CRF: **1.15** % INJURY: **22.2** TOTAL CRASHES: **9**




Portland
Link: 17038-17039
Element: 3129290
Study Period: 2020-2022
# of Crashes: 9 / CRF: 1.15
Prepared by Office of Safety & Mobility
RFK3 5-15-23
17039
17038
Driveway
37357 12-15-22 7:30A D/C Hit and run
19230 7-9-22 4:34A D/C Fellasleep
B
28981 10-26-21 10:59A W/R Fail to yield
577 1-8-20 5:39P D/C Follow too close
Washington Ave
Rt 26
31358 10-28-22 7:15P D/C OUI
C
C
3581 2-9-21 6:53A W/S Follow too close
5795 1-24-20 5:00P D/C Unknown
5642 3-2-21 12:30P D/C Fail to yield
15896 6-8-22 11:30A W/C
Improper Backing
#626
#606 Anania's

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

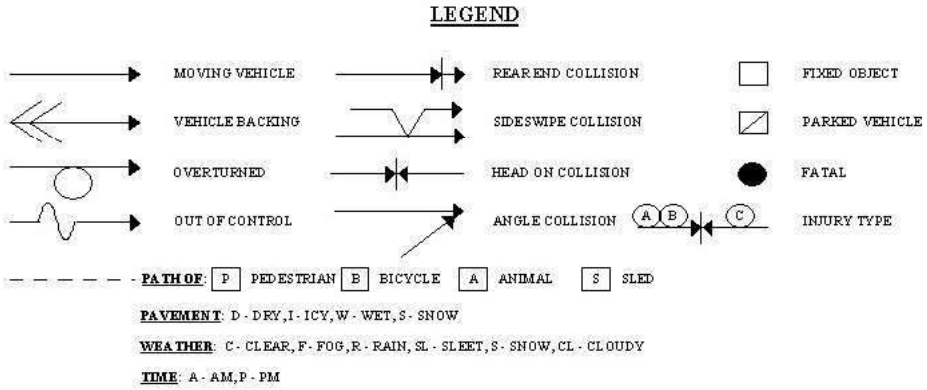
LOW NODE: **17045** HIGH NODE: **17046** REGION: **1** U/R: **URBAN**

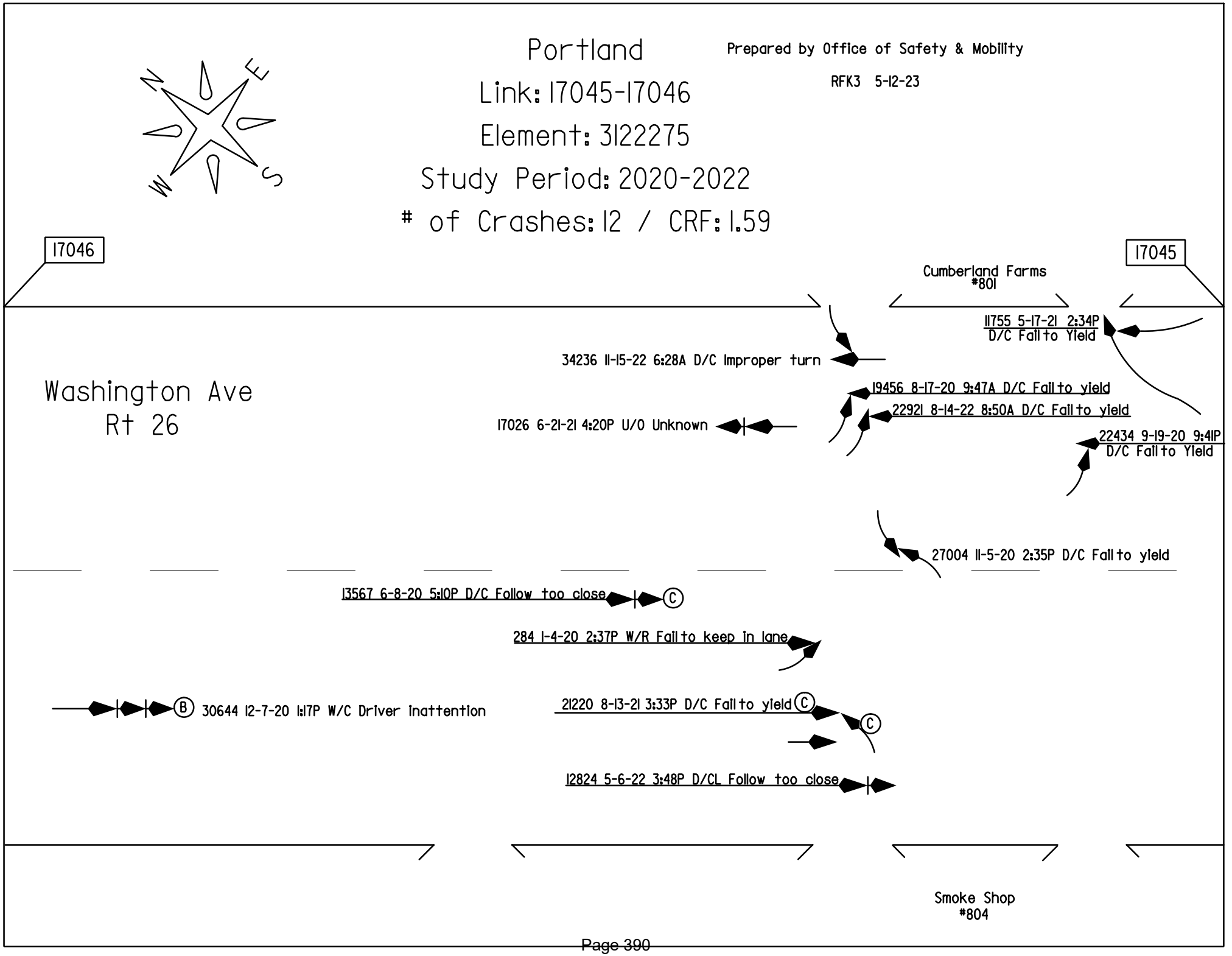
DESCRIPTION: **Washington Ave from Ocean Ave to Byfield Rd**

RTE # / RD #: **0026X** DATE DRAWN: **5/12/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **673.57** CRF: **1.59** % INJURY: **25** TOTAL CRASHES: **12**




Portland
Link: 17045-17046
Element: 3122275
Study Period: 2020-2022
# of Crashes: 12 / CRF: 1.59
Prepared by Office of Safety & Mobility
RFK3 5-12-23
17046
17045
Cumberland Farms
#801
11755 5-17-21 2:34P
D/C Fail to Yield
34236 11-15-22 6:28A D/C Improper turn
19456 8-17-20 9:47A D/C Fail to yield
22921 8-14-22 8:50A D/C Fail to yield
Washington Ave
Rt 26
17026 6-21-21 4:20P U/O Unknown
22434 9-19-20 9:41P
D/C Fail to Yield
27004 11-5-20 2:35P D/C Fail to yield
13567 6-8-20 5:10P D/C Follow too close
C
284 1-4-20 2:37P W/R Fail to keep in lane
B
30644 12-7-20 1:17P W/C Driver Inattention
21220 8-13-21 3:33P D/C Fail to yield
C
C
12824 5-6-22 3:48P D/CL Follow too close
Smoke Shop
#804

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

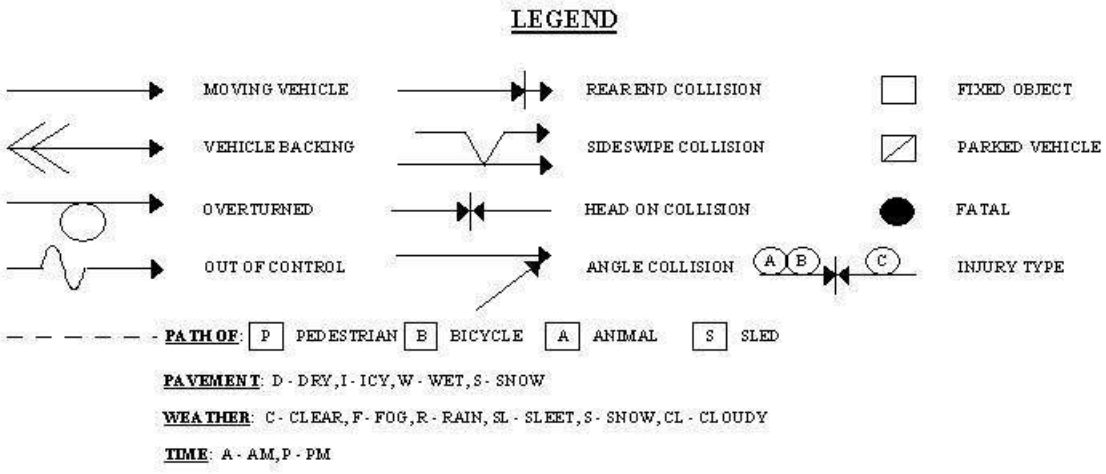
LOW NODE: **17038** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

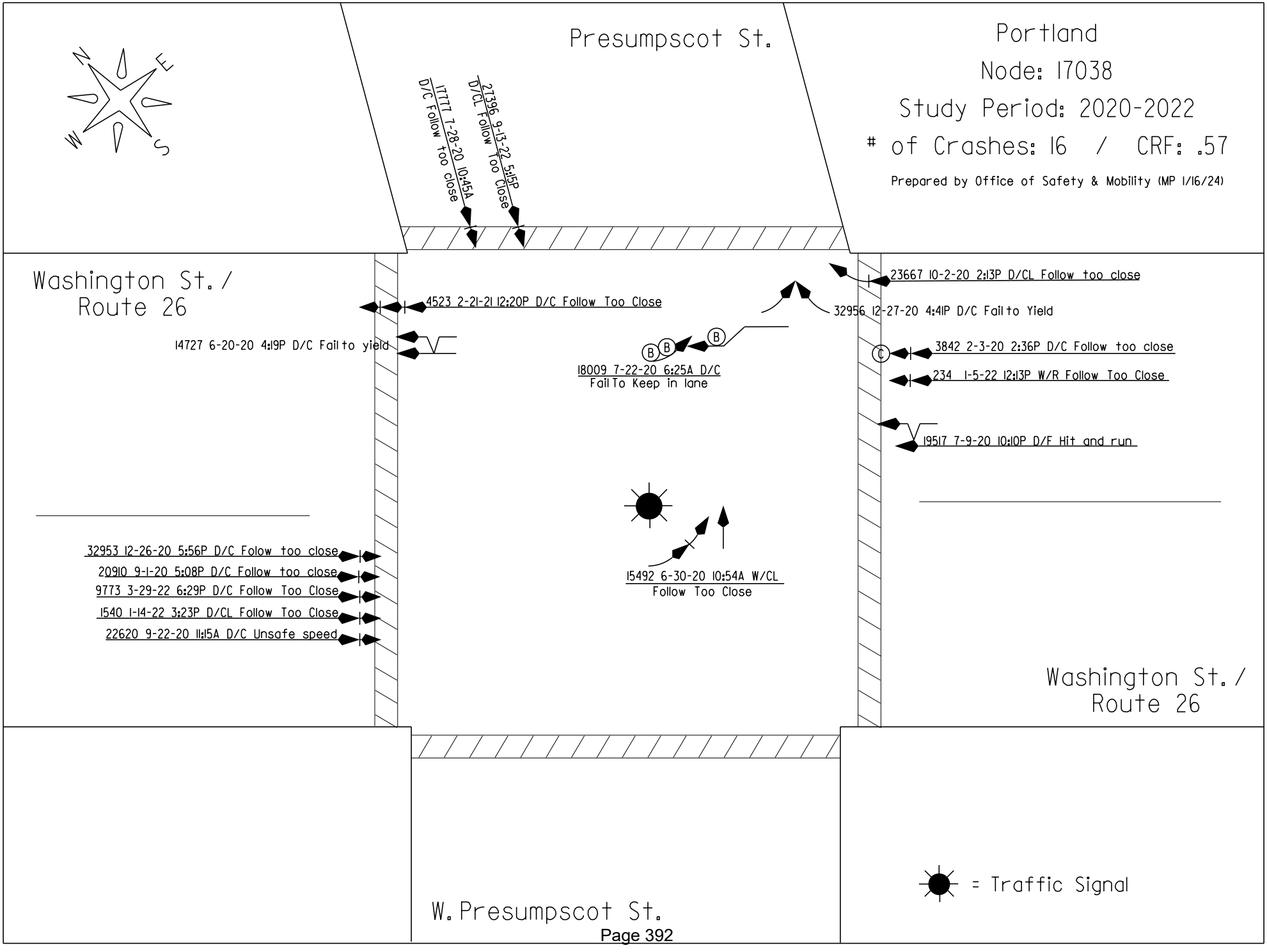
DESCRIPTION: **Int Washington Ave & Presumpscot St**

RTE # / RD #: **0026X** DATE DRAWN: **1/16/2024** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **0.58** CRF: **0.57** % INJURY: **12.5** TOTAL CRASHES: **16**




Presumpscot St.
Portland
Node: 17038
Study Period: 2020-2022
# of Crashes: 16 / CRF: .57
Prepared by Office of Safety & Mobility (MP 1/16/24)
17777 7-28-20 10:45A D/C Follow too close
27396 9-13-22 5:15P D/CL Follow Too Close
Washington St./ Route 26
4523 2-21-21 12:20P D/C Follow Too Close
14727 6-20-20 4:19P D/C Fail to yield
23667 10-2-20 2:13P D/CL Follow too close
32956 12-27-20 4:41P D/C Fail to Yield
3842 2-3-20 2:36P D/C Follow too close
234 1-5-22 12:13P W/R Follow Too Close
19517 7-9-20 10:10P D/F Hit and run
18009 7-22-20 6:25A D/C
Fail To Keep in lane
15492 6-30-20 10:54A W/CL
Follow Too Close
32953 12-26-20 5:56P D/C Folow too close
20910 9-1-20 5:08P D/C Follow too close
9773 3-29-22 6:29P D/C Follow Too Close
1540 1-14-22 3:23P D/CL Follow Too Close
22620 9-22-20 11:15A D/C Unsafe speed
Washington St./ Route 26
W. Presumpscot St.
= Traffic Signal

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

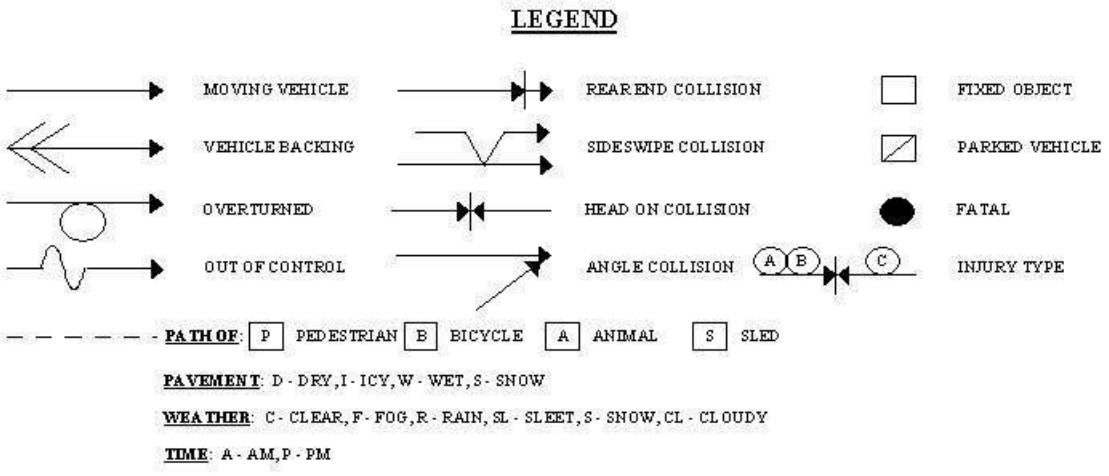
LOW NODE: **17045** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

DESCRIPTION: **Int Washington Ave & Ocean Ave**

RTE # / RD #: **0009X** DATE DRAWN: **1/16/2024** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **0.85** CRF: **0.81** % INJURY: **19** TOTAL CRASHES: **21**



Washington Ave.
N
W
E
S
hydrant
19221 7-10-22 5:47P D/C Improper Turn
13342 6-2-21 2:14P D/C Inattention
38417 9-6-22 11:37A
W/R Hit & Run
7637 2-14-21 6:42P D/C Fail to Yield
27207 10-23-20 4:09P D/C Fail to yield
35400 11-29-22 7:42A D/C Fail to Yield
2692 1-26-22 8:20A D/C Sun Glare
4525 2-8-20 9:30A W/C Unknown
18580 7-2-22 3:00P D/C Improper Pass
44211 2-8-22 2:10P W/C Follow Too Close
Ocean Ave.
Rt 9
8399 4-2-21 6:21P D/C Fail to Keep In Lane
C
C
35532 12-1-22 12:18A D/C Ran Red Light
Ocean Ave.
B
B
9122 3-27-20 3:04P D/C Follow Close
465 1-4-20 11:57A W/C Follow Close
10942 5-4-20 11:57A D/C Follow Close
C
27985 10-17-21 8:59P D/C Inattention
C
31309 12-13-20 6:10P W/C Follow close
16629 7-14-20 1:20P W/R Speed
C
6857 2-28-22 4:00P D/C Reckless
31500 10-31-22 3:05P D/C Follow Close
37852 12-19-22 8:32A D/C Follow Close
Traffic Signal
Portland
Node: 17045
Study Period: 2020-2022
# of Crashes: 21 / CRF: .81
Prepared by Office of Safety & Mobility
(MP 1/16/24)
Washington Ave.

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

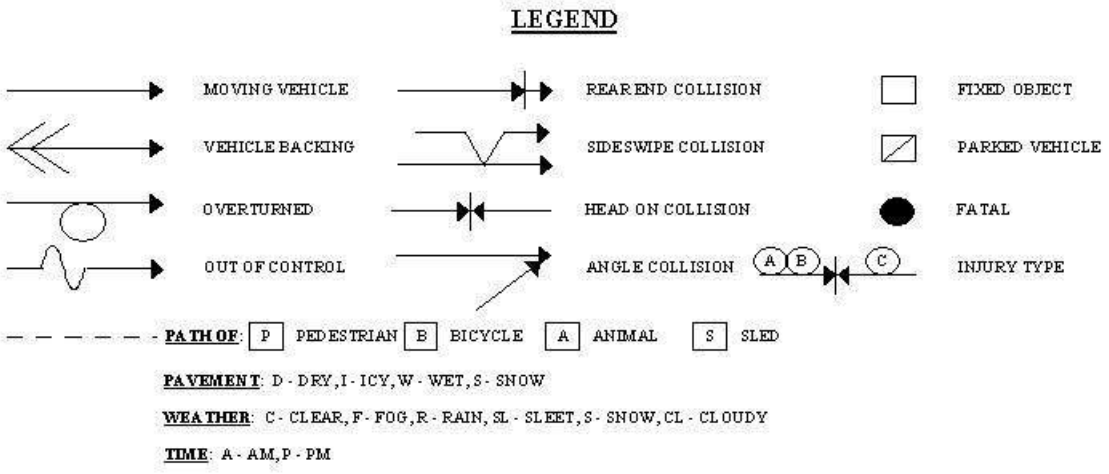
LOW NODE: **18737** HIGH NODE: **0000** REGION: **1** U/R: **URBAN**

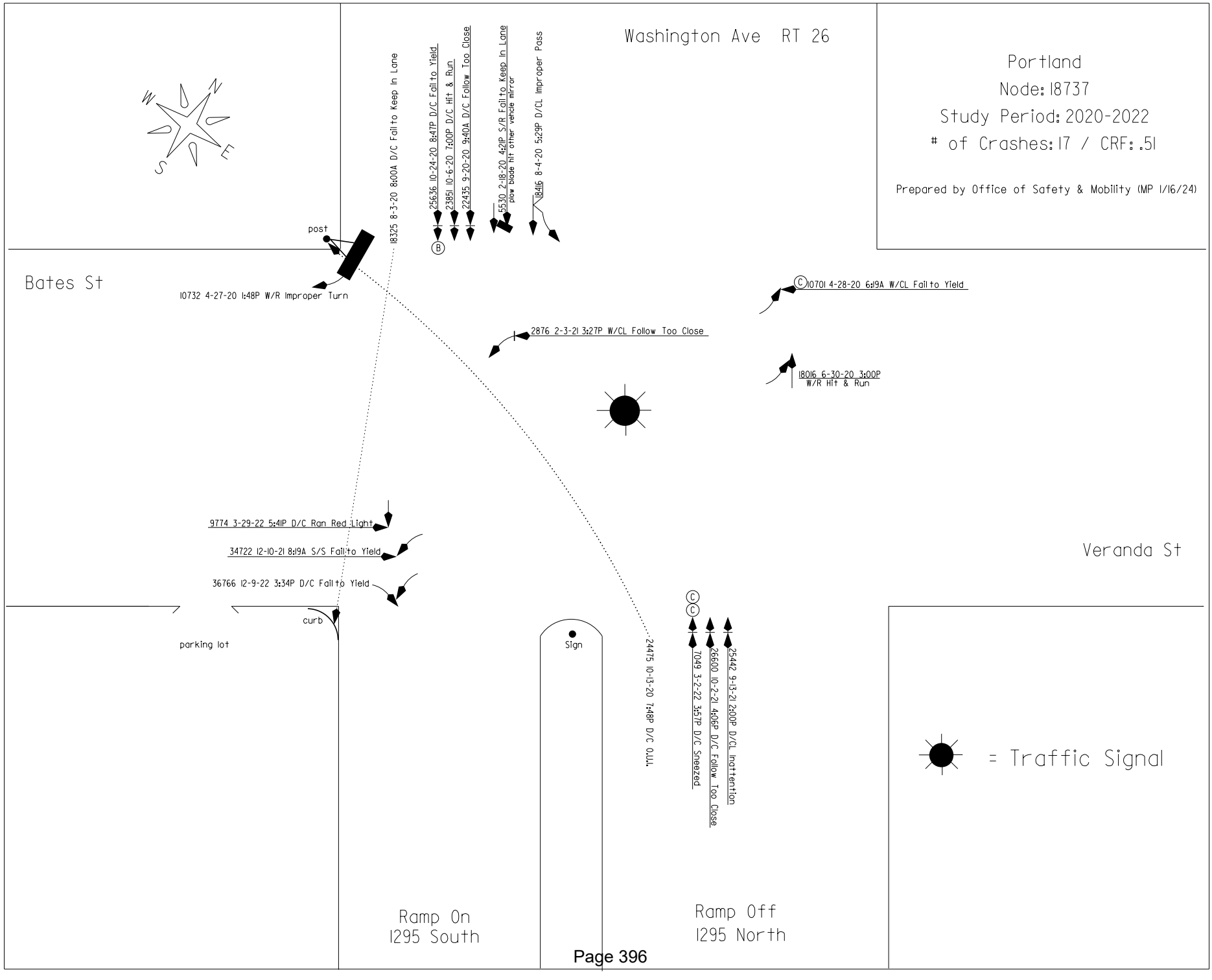
DESCRIPTION: **Int Washington Ave & Bates St/Veranda St**

RTE # / RD #: **0026S** DATE DRAWN: **1/16/2024** DRAWN BY: **Michelle**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **0.51** CRF: **0.51** % INJURY: **17.6** TOTAL CRASHES: **17**




Washington Ave RT 26
Portland
Node: 18737
Study Period: 2020-2022
# of Crashes: 17 / CRF: .51
Prepared by Office of Safety & Mobility (MP 1/16/24)
Bates St
Veranda St
post
18325 8-3-20 8:00A D/C Fail to Keep In Lane
25636 10-24-20 8:47P D/C Fail to Yield
23851 10-6-20 7:00P D/C Hit & Run
22435 9-20-20 9:40A D/C Follow Too Close
5530 2-18-20 4:21P S/R Fail to Keep In Lane
plow blade hit other vehicle mirror
18416 8-4-20 5:29P D/CL Improper Pass
10732 4-27-20 1:48P W/R Improper Turn
10701 4-28-20 6:19A W/CL Fail to Yield
2876 2-3-21 3:27P W/CL Follow Too Close
18016 6-30-20 3:00P
W/R Hit & Run
9774 3-29-22 5:41P D/C Ran Red Light
34722 12-10-21 8:19A S/S Fail to Yield
36766 12-9-22 3:34P D/C Fail to Yield
curb
parking lot
Sign
24475 10-13-20 7:48P D/C O.U.I.
7049 3-2-22 3:57P D/C Sneezed
26600 10-2-21 4:06P D/C Follow Too Close
25442 9-13-21 2:00P D/CL Inattention
= Traffic Signal
Ramp On
I295 South
Ramp Off
I295 North

Attachment 7F

Signal Warrants

Traffic Volumes for Baxter & Bates Warrant

2-Way Volumes on Baxter Blvd (DOT Count May 2022)			2032 Build Projected Volume at Bates & Baxter	
Hour	*Volume*	*Multiple of Peak Hour*	*Sum of Major Approaches (peak hour 639)*	*Minor Approach (peak hour 277)*
12:00 AM	8	0.02	11	5
1:00 AM	3	0.01	4	2
2:00 AM	3	0.01	4	2
3:00 AM	3	0.01	4	2
4:00 AM	8	0.02	11	5
5:00 AM	65	0.15	93	40
6:00 AM	156	0.35	224	97
7:00 AM	446	1.00	639	277
8:00 AM	335	0.75	480	208
9:00 AM	277	0.62	397	172
10:00 AM	227	0.51	325	141
11:00 AM	242	0.54	347	150
12:00 PM	265	0.59	380	165
1:00 PM	274	0.61	393	170
2:00 PM	334	0.75	479	207
3:00 PM	399	0.89	572	248
4:00 PM	420	0.94	602	261
5:00 PM	360	0.81	516	224
6:00 PM	224	0.50	321	139
7:00 PM	162	0.36	232	101
8:00 PM	61	0.14	87	38
9:00 PM	57	0.13	82	35
10:00 PM	30	0.07	43	19
11:00 PM	9	0.02	13	6

	For Warrants	
	Sum of Major Approaches	Minor Approach
Peak Hour	639	277
4th Highest Hour	516	224
8th Highest Hour	393	170
12th Highest Hour	321	139

Warrant 1: Eight-Hour Vehicular Volume

	Vehicles per hour on major street (total of both approaches)	Vehicles per hour on more critical minor street approach (one direction only)
Bates & Baxter:	393	170

Condition A

Number of lanes for moving traffic on each approach				
Major Street	Minor Street			
1	1	500	150	
2 or more	1	600	150	Not met
2 or more	2 or more	600	200	
1	2 or more	500	200	

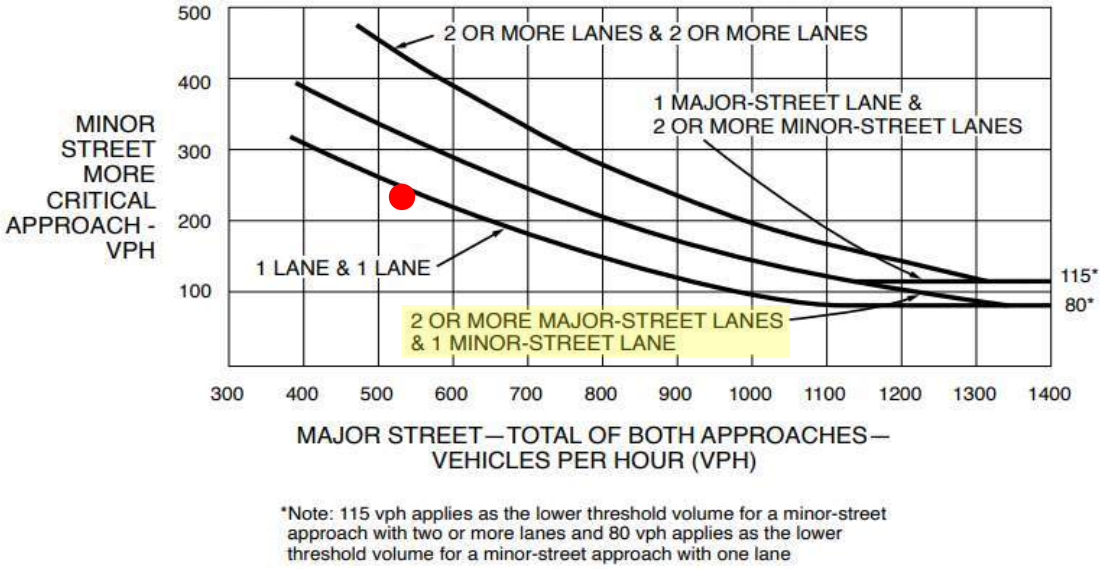
Condition B

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)	Vehicles per hour on more critical minor street approach (one direction only)	
Major Street	Minor Street			
1	1	750	75	
2 or more	1	900	75	Not met
2 or more	2 or more	900	100	
1	2 or more	750	100	

Warrant 2: Four-Hour Vehicular Volume

	Vehicles per hour on major street (total of both approaches)	Vehicles per hour on more critical minor street approach (one direction only)	
Bates & Baxter:	516	224	PM Pk Hr

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane

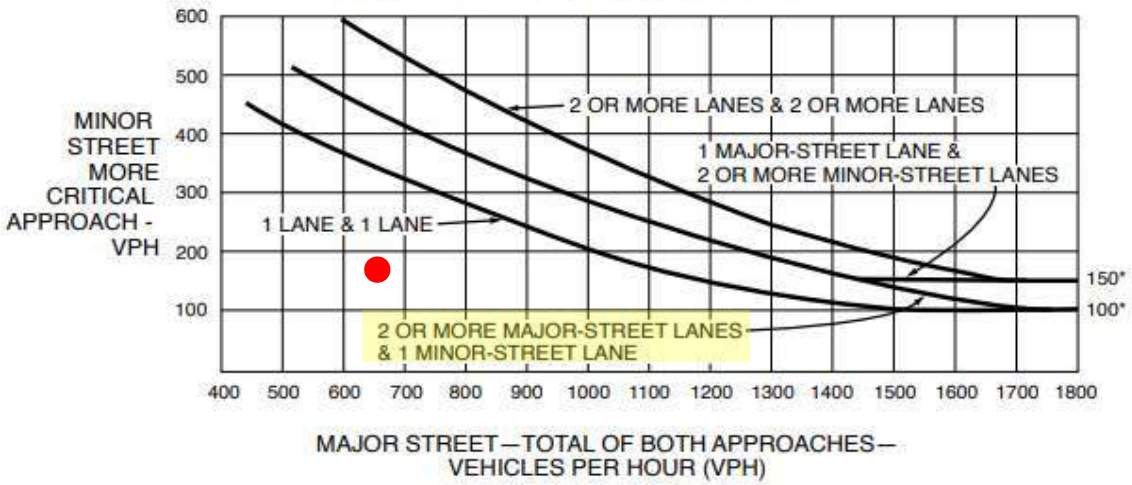
Warrant 3: Peak Hour Vehicular Volume

Condition A

Not met	The total stopped-time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach, and
Met	The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes, and
Met	The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.

Condition B Not met.

Figure 4C-3. Warrant 3, Peak Hour



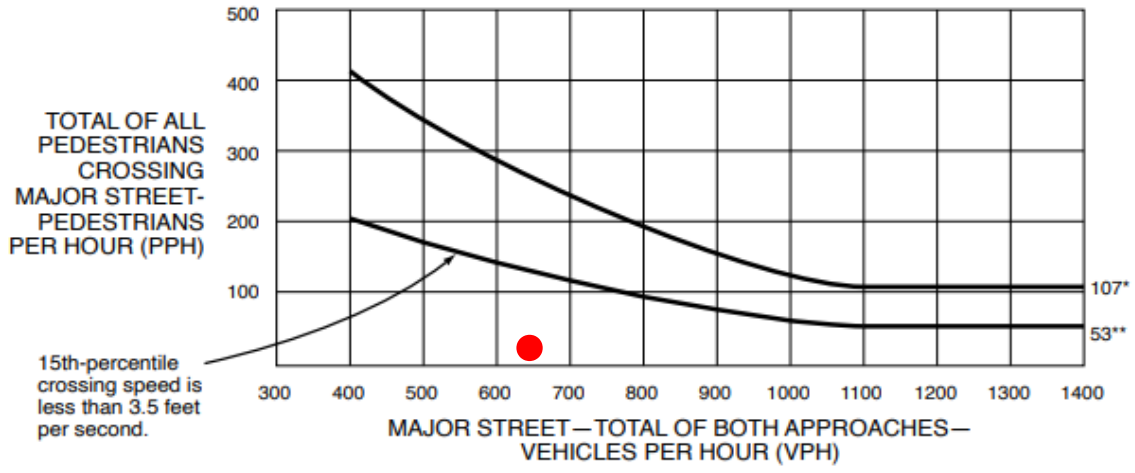
*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane

Warrant 4: Pedestrian Volume

	Pedestrians per hour crossing major street	Vehicles per hour - major street
AM Peak Hour	11	620
PM Peak Hour	13	639

Condition A Not met.

Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume

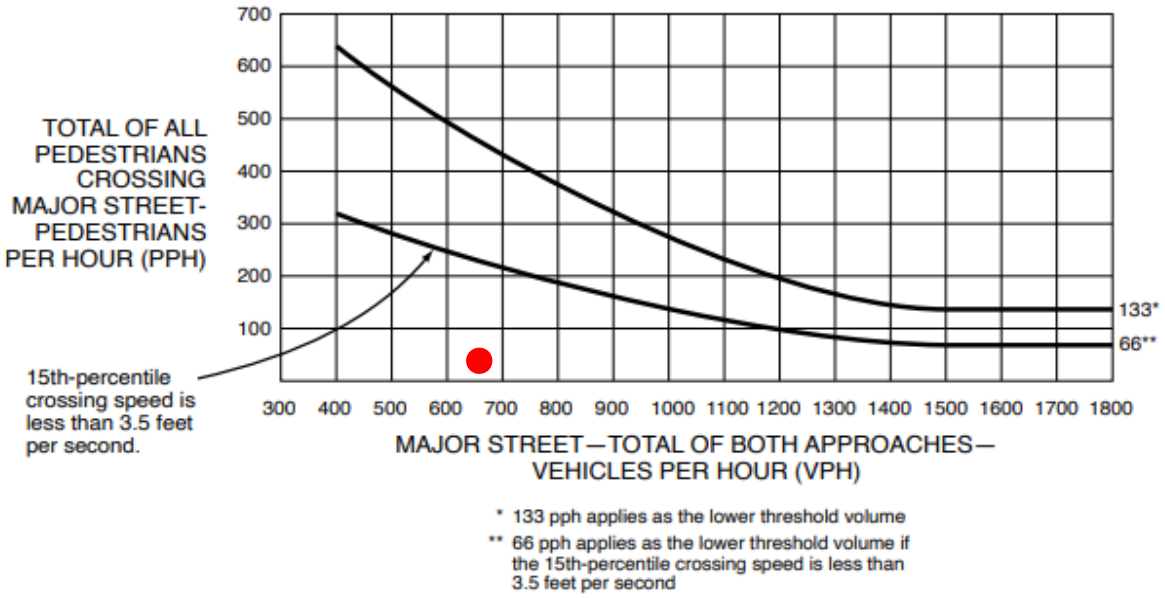


* 107 pph applies as the lower threshold volume

** 53 pph applies as the lower threshold volume if the 15th-percentile crossing speed is less than 3.5 feet per second

Condition B Not met.

Figure 4C-6. Warrant 4, Pedestrian Peak Hour



* 133 pph applies as the lower threshold volume

** 66 pph applies as the lower threshold volume if the 15th-percentile crossing speed is less than 3.5 feet per second

Traffic Volumes for Sherwood & Veranda Warrant

2-Way Volumes on Veranda St (DOT Count October 2019)			2032 Build Projected Volume at Sherwood & Veranda	
Hour	*Volume*	*Multiple of Peak Hour*	*Sum of Major Approaches (peak hour 728)*	*Minor Approach (peak hour 251)*
12:00 AM	34	0.06	46	16
1:00 AM	20	0.04	27	9
2:00 AM	14	0.03	19	7
3:00 AM	24	0.04	33	11
4:00 AM	38	0.07	52	18
5:00 AM	49	0.09	67	23
6:00 AM	164	0.31	223	77
7:00 AM	414	0.77	563	194
8:00 AM	448	0.84	610	210
9:00 AM	353	0.66	480	166
10:00 AM	345	0.64	469	162
11:00 AM	432	0.81	588	203
12:00 PM	419	0.78	570	197
1:00 PM	439	0.82	597	206
2:00 PM	437	0.82	595	205
3:00 PM	494	0.92	672	232
4:00 PM	535	1.00	728	251
5:00 PM	482	0.90	656	226
6:00 PM	355	0.66	483	167
7:00 PM	189	0.35	257	89
8:00 PM	192	0.36	261	90
9:00 PM	120	0.22	163	56
10:00 PM	71	0.13	97	33
11:00 PM	74	0.14	101	35

	For Warrants	
	Sum of Major Approaches	Minor Approach
Peak Hour	728	251
4th Highest Hour	610	210
8th Highest Hour	570	197
12th Highest Hour	469	162

Warrant 1: Eight-Hour Vehicular Volume

	Vehicles per hour on major street (total of both approaches)	Vehicles per hour on more critical minor street approach (one direction only)	
Sherwood & Veranda:	570	197	

Condition A

Number of lanes for moving traffic on each approach				
Major Street	Minor Street			
1	1	500	150	
2 or more	1	600	150	
2 or more	2 or more	600	200	
1	2 or more	500	200	Not met

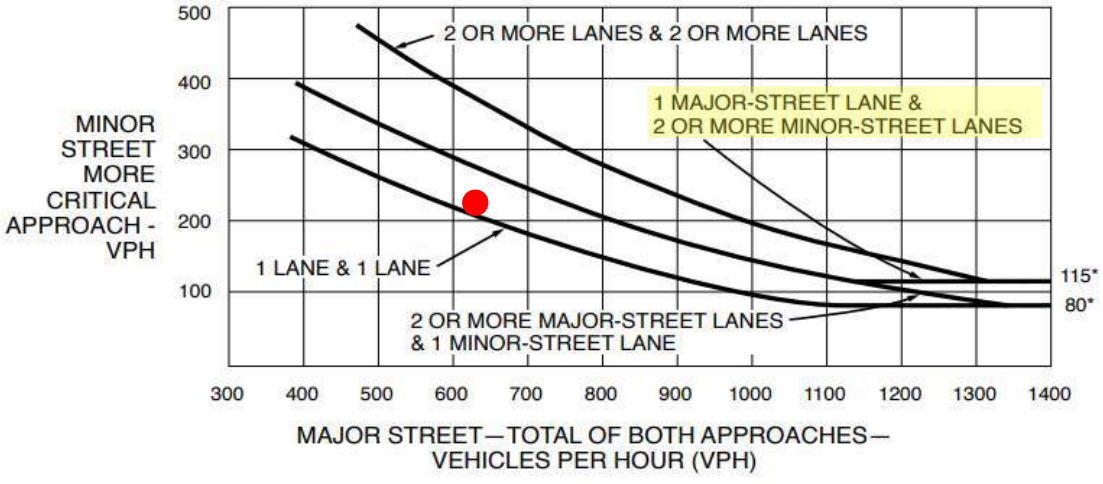
Condition B

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)	Vehicles per hour on more critical minor street approach (one direction only)	
Major Street	Minor Street			
1	1	750	75	
2 or more	1	900	75	
2 or more	2 or more	900	100	
1	2 or more	750	100	Not met

Warrant 2: Four-Hour Vehicular Volume

	Vehicles per hour on major street (total of both approaches)	Vehicles per hour on more critical minor street approach (one direction only)	
Sherwood & Veranda	610	210	PM Pk Hr

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane

Warrant 3: Peak Hour Vehicular Volume

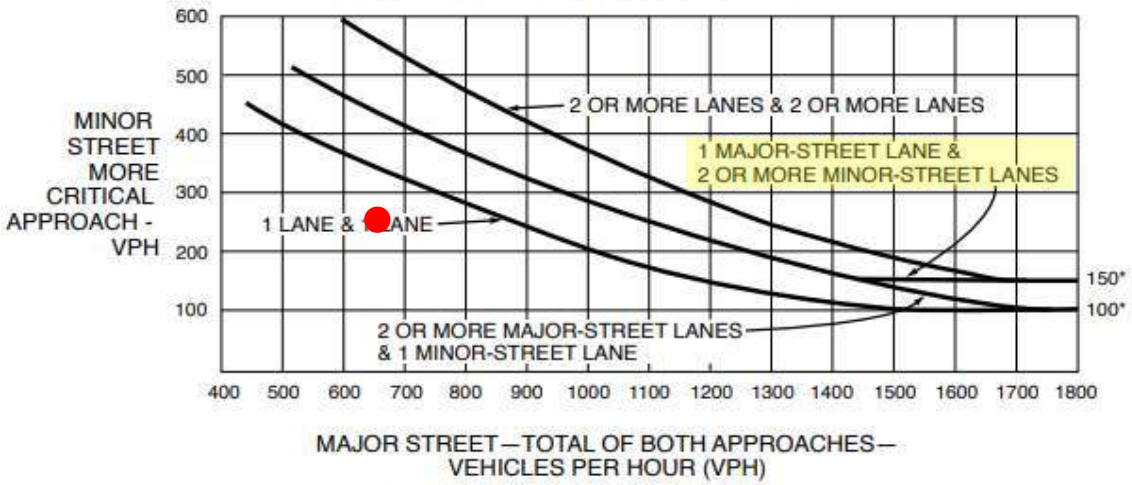
Condition A

Not met*	The total stopped-time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach, and
Met	The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes, and
Met	The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.

* with Sherwood Street improvements, specifically the separate left and right turn lanes

Condition B Not met.

Figure 4C-3. Warrant 3, Peak Hour



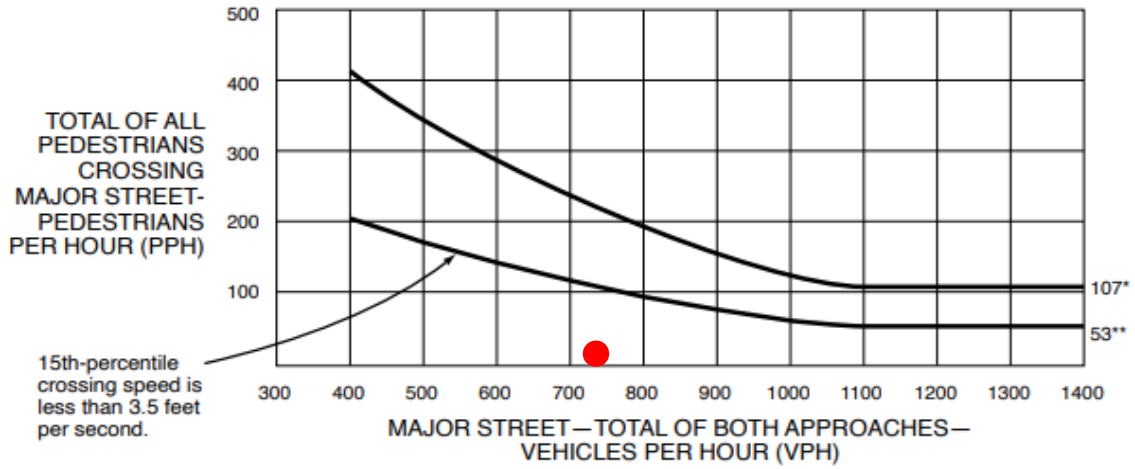
*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane

Warrant 4: Pedestrian Volume

	Pedestrians per hour crossing major street	Vehicles per hour - major street
AM Peak Hour	3	484
PM Peak Hour	3	728

Condition A Not met.

Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume

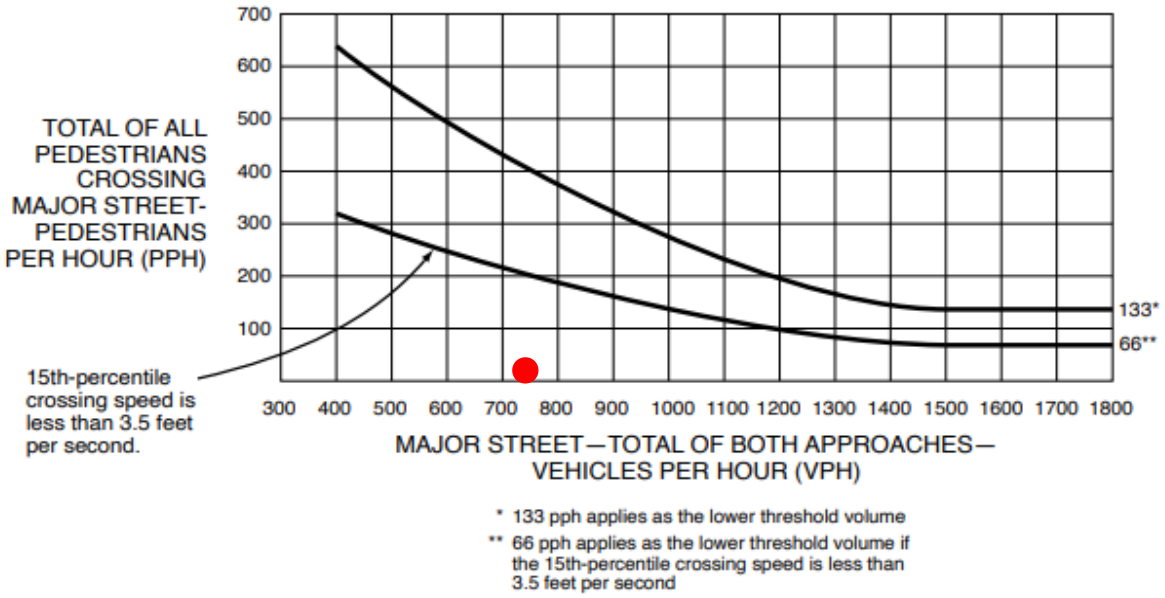


* 107 pph applies as the lower threshold volume

** 53 pph applies as the lower threshold volume if the 15th-percentile crossing speed is less than 3.5 feet per second

Condition B Not met.

Figure 4C-6. Warrant 4, Pedestrian Peak Hour



* 133 pph applies as the lower threshold volume

** 66 pph applies as the lower threshold volume if the 15th-percentile crossing speed is less than 3.5 feet per second

Attachment 7G

Response to City of Portland Comments
Response to East Deering Neighborhood Comments

City of Portland Comments

1. Although not typically required as part of a TMP, we do think understanding parking demand and supply is critical in estimating traffic impacts. Accordingly, we suggest that a parking demand analysis be provided. Parking demand is provided in the Section 7 Traffic Impact Study.
2. The applicant shall provide backup data in support of the trip rate assumption that 25% of staff will follow student distribution. Roux Institute leadership estimated the proportion of faculty and staff at the Roux Institute that will follow a typical office schedule vs. being more student facing and we used that estimate to split the faculty and staff into the appropriate distributions.
3. The applicant shall provide the January 2023 student survey. Survey results are provided in the Section 7 Traffic Impact Study.
4. The applicant shall provide the daytime/nighttime student split backup from Northeastern used in the trip generation estimate. The move to the new campus will include growing daytime offerings, and increasing full-time student enrollment (day students) so at full occupancy, the Roux Institute anticipates the 50/50 day/night students.
5. The applicant shall define Affiliated Users. Affiliated users are people affiliated with the Roux Institute but that are only rarely on campus. For example, alumni or people enrolled in online courses or other irregular needs.
6. In our opinion some off-site generated trips to the Café are likely. The study should not assume 100% of the trip generation is from internal uses. It may make sense that 80% be assumed, like the Daycare. After the review at the Scoping meeting, per MaineDOT direction, the internal capture calculations are consistent with calculations presented in Sections 1-6.
7. The Mode share is consistent with the TDM Plan and seems reasonable. Comment acknowledged.
8. The applicant shall provide backup information in support of the trip distribution estimate. We would like the estimate to also recognize the potential for parking cost and availability. As outlined at the Scoping Meeting, trip distribution was based on US Census Journey to Work and population density within a commuting distance of the campus and likely routes of travel to and from the campus. Once developed, the distribution was checked against the zip code data for student residents. Although this was a small sample size at that time, it was consistent with the distribution developed based on population and commuting patterns.
9. The trip generation method for the ITE land uses is based on a unique methodology where peak hour trip levels are based on a weekday estimate. The Café, Daycare and Office will generate more traffic if estimated by peak hour vs. the current method. Should adjustments be incorporated. If calculated using the peak hour rather than the ITE daily distribution by hour, the trip generation for each land use could be overestimated as the peak hour frequently occurs mid hour (4:30 to 5:30 pm for example) and would result in a super peak that is not likely to occur. With the trip generation already including conservative assumptions and input from MaineDOT, trip generation calculations are consistent with calculations presented in Sections 1-6.
10. It is suggested that building occupancy also be a consideration as it relates to project impacts with a phased development and the timing of mitigation implementation. It may be helpful to understand trip generation and traffic impacts based on floor area. Although the Roux Institute hopes to occupy the space starting in 2027, the space will not be fully occupied at that time. The trip generation provided for 2032 assumes enrollment that would result in full occupancy of the campus as permitted.
11. The internal pedestrian adjustments seem to account for interaction that overpredicts internal activity. Both General Office and Students should not have adjustments since they are primary trips. I would note that we continue to review the internal capture estimate (which seems high)

and will provide feedback at the scoping meeting. Embedded startups and other on-site companies are locating on a college campus in large part to access the student labor pool and cross-trips between these land uses is part of the Roux Institute's success.

12. While this is not the project driveway intersecting the public street system, we suggest sight distance be provided at the Veranda/Sherwood intersection, given it the only entrance to the project and the primary access point. Sight distance has been measured at this location and is included in the Section 7 Traffic Impact Study.
13. It is suggested that trip distribution for bicycle and pedestrian trips also be provided to assist in evaluating infrastructure and potential mitigation requirements. Trip distribution and potential assignment of non-vehicular trips can be seen in the Traffic Impact Study.

East Deering Neighborhood for Responsible Development

Roux Institute at Northeastern University

MaineDOT Traffic Movement Permit Application

Traffic Review Comments

(December 12, 2023)

Traffic Movement Permit – Compliance Review [Chapter 305 Rules and Regulations Pertaining to Traffic Movement Permits]

PART #5 Specific Traffic Movement Process Requirements

B. Page 12 of TMP

> *TMP Standard: MaineDOT's standard on page 13 of TMP regulations requires all intersections where, during any one-hour period, traffic attributable to the proposed development equals or exceeds (b.) 50 thru and/or right -turn movements.*
>
> **Study area should be extended to include the I-295 NB off-ramp in its entirety. A total of 106 vehicle trips are projected for two exiting lanes.**
>
> **The intersection of Washington/Bates/Veranda/Ramps is a part of the study area. This includes the queuing on the I-295 NB off ramp.**

C. Consideration of Multi-Modal Trips

> *TMP Standard: MaineDOT standard is presented on page 13 of TMP regulations. The Study Area for multi-modal considerations, or the Multi-Modal Study Area shall be determined by defining a circle around the project with a minimum radius of ¼ mile for urban/suburban contexts.*
>
> **A multi-modal study area map was not included in the TMP Application.**
>
> **An assessment and mapping of the existing conditions by mode have been included in the TMP Section 7 Traffic Impact Study. In addition, a multi-modal analysis of impacts has been conducted as part of the TMP Section 7 Traffic Impact Study.**

PART #6 Submittal Requirements

Section #1

> C. Regional Map
>
> TMP Standard: *MaineDOT standard is presented on page 15 of TMP regulations. This map must also show other development sites in the study area, etc.*

Regional map should be updated as necessary locating both defined other development sites, etc.

A regional map has been updated locating all other development projects identified by the City of Portland and the City's peer reviewer as part of the TMP Section 7 Traffic Impact Study.

TMP Standard: *This regional map shall include pedestrian, bicycle and transit Trip generators, origins and destinations within a radius of ¼ miles for urban/suburban contexts.*

Regional map should be updated as necessary locating both defined other development sites, etc.

The regional map has been provided illustrating the destinations in area.

E. Information Concerning Vehicle Trip Generation.

TMP Standard: *MaineDOT standard is presented on page 15 of TMP regulations. The Applicant should identify the expected use or uses of the Development, the amount of space or number of site users (or other suitable indicator of Trip generation), and the resulting Vehicle Trip Generation of the proposed Development, including the weekday morning peak hour, the evening peak hour, daily Traffic, and other peak periods as maybe appropriate (weekday mid-day peak, weekend mid0day peak, etc.). The Applicant must include appropriate documentation and references and document both Trip rates and Trip types. Trip generation must be calculated using approved methodology referenced in the MaineDOT Traffic Analysis Guidelines. The trip generation data must be presented in a summary table listing each type of land-use, the size involved, the Trip generation rate used (total daily Traffic and a.m./p.m., weekend peak if necessary), and the resultant Trips generated for the design peak hour of the adjacent street, or the design peak hour of the generator, whichever is the worst-case scenario for the network.*

The TMP application only lists two other development projects for the study area. The Applicant should explore in greater detail the status of several other development projects within the study corridor. The project study area appears to include the section of Washinton Avenue through Allen's Corner, the entire length of Veranda Street, Sherwood Street, etc. Perhaps a formal letter from the City's Planning Office should be included in the application that identifies all other development projects within the study area.

The City of Portland and the City's traffic peer reviewer both confirmed the development projects via email on January 4, 2024. These projects were included as part of the TMP Section 7 Traffic Impact Study.

AM and PM peak hour trip generation was not provided for the peak hour of the street and documentation wasn't provided determining what peak hour represents the worst-case condition.

Site trip projection formulars were not provided for all site uses for each designated peak hour time period. Detailed hourly trip generation by land use/population is provided in the TMP Section 7 Traffic Impact Study.

Site trip generation estimates for the proposed student population were based upon a single-day study performed at the existing Roux site on Fore Street in Portland. MaineDOT's standard requires a minimum of three study dates. The study findings do not define the existing student population on the day of the survey, a per student trip rate isn't provided, etc. The percentages of trips entering and exiting the site are not provided as well. Consistent with MaineDOT practices, additional study information should be required, and, or trip rates presented in the 11th editions should be used in projecting site trip generation for the student population.

Additional detail is required in support of the overall trips calculations, including trip rate formulas, local study conducted at 100 Fore Street. Provide study detail of traffic survey, i.e. number of students in existing school, summarization of student residences, trip rate projections per student for each applicable peak hour time period, etc.

Site trip generation estimates were developed based on future projections of the different population groups, not a single day count at the Roux site. The trip generation methodology was presented at the Scoping Meeting and is further detailed in the TMP Section 7 Traffic Impact Study. A count at the Roux site was used to confirm the assumed arrival and departure patterns of day and night students, not the rate of trip generation. As expected, there is typically a two to three hour arrival and departure pattern for each student group.

Trip generation for the proposed Bean Building, should be based upon LUC # 760 Research and Development Center not LUC # 710 General Office building.

The business incubator and business partners are expected to follow the commuter patterns of office employees, making LUC 710 the more appropriate land use.

Per MaineDOT, the TMP Section 7 Traffic Impact Study will continue to use the trip generation as presented in Sections 1-6 with more detailed explanation.

F. Information about Trip Distribution

TMP Standard: *MaineDOT standard is presented on page 16 of TMP regulations. For developments which generate 500 or greater Trips, a gravity model, market study, or*

other approved methodology referenced in the MaineDOT Traffic Analysis Guidelines is requested to determine Trip distribution.

Consistent with MaineDOT's standard a detailed gravity model should be required for the assignment of the site traffic; or at a minimum the trip assignment process used in the Application should be peer reviewed by a traffic modeling expert to ensure its accuracy.

Anecdotally, the present trip assignment appears to over estimate the number of trips on I-295 south and underestimates the number of trips traveling north of I-295. Additionally, the site trips assigned to Sherwood Street also appear low knowing that motorists traveling to the Towns of Gray, Cumberland, North Yarmouth, etc. will seek optional less traveled streets/roads to avoid the heavy congestion that presently exists and that will certainly be exacerbated with traffic generated by the proposed project.

Consideration should be given to extend the 1-295 south trip assignment to include the Franklin Arterial intersection.

Three methods were used to determine the trip distribution. First, a gravity model was developed based on the populations of communities in the likely commute-shed of the proposed site. To provide further understanding, a gravity model was developed based on US Census journey-to-work for workers in Portland. The likely routes from each community to the site was determined. Based on these models, the trip distribution presented in the TMP Section 1 to 6 was developed. Subsequent to that analysis, the zip codes of current students were reviewed and assigned to likely routes. As presented in the TMP Section 7 Traffic Impact Study, the student zip codes were consistent with those developed by the gravity models.

PART #6 Submittal Requirements (Continued)

Section #2: Traffic Crashes.

A. TMP Standard: *MaineDOT standard is presented on page 16 of TMP regulations. An identification of high crash locations including road segments, intersections, or development entrances and exits that maybe deemed unsafe when Traffic encounters conditions such as inadequate turning radii, poor geometrics, limited sight distances or high crash locations.*

The crash report requested through MaineDOT omits the I-295 off-ramp in its entirety. This segment has consistently been a HCL location over a number of years; the most recent 2019 through 2021 crash report, listed a total of 12 crashes for the I-295 NB exit ramp onto Washington Avenue with a Critical Rate Factor of 2.04 The I-295 NB off-ramp onto Washington Avenue should be included in the crash data study.

In addition, the following HCL locations identified in the 2020-2022 crash report and three additional locations that are a single crash away from satisfying MaineDOT's HCL criterion and/experience high number of vehicle crashes:

1. **Washinton Avenue @ Church Street 7 crashes/0.96 CRF**
2. **Washington Avenue @ E. Kidder Street and W. Kidder Street 7 crashes/1.15 CRF**
3. **Washington Avenue @ Ocean Avenue 21 crashes/0.82 CRF**
4. **Washington Avenue @ Randall Street 7 crashes/ 0.95 CRF**
5. **Washington Avenue bwt. Randall Street and Veranda Street 8 crashes/1.15 CRF**
6. **Washington Avenue btw. East and West Presumpscot Streets 9 crashes/1.15**
7. **Washington Avenue btw, Byfield Avenue and Ocean Avenue 12 crashes/1.59 CRF**
8. **Ocean Avenue btw. Washington Avenue and Payson Park Entrance 9 crashes/1.90 CRF**

As indicated, four of these locations do not meet the criteria of a HCL and were omitted from the Section 1 to 6 Table 5 High Crash Locations. Based on discussion at the Scoping Meeting, each signalized intersection on Washington Avenue between Ocean Street and Veranda Street were further investigated in the TMP Section 7:

1. **Washington Avenue / Ocean Avenue**
2. **Bates Street / Veranda Street / Washington Avenue**
3. **Washington Avenue / Presumpscot Street**

Additional investigation of the I-295 Exit 8 off-ramp was raised at the scoping meeting. Historically this section has been an HCL (most recently 2017-2019 and 2019-2021 study periods). This section has experienced 6 crashes and a CRF of 1.03 for the 2020-2022 period and is not considered an HCL. Additionally, this section was also investigated for the 2021-2023 period and experienced 4 crashes, therefore additional study of the Exit 8 off-ramp is not warranted.

MaineDOT practice requires a presentation of crash patterns for each identified location and possible mitigation measures for improvement.

The TMP Application omits this information. The section of the application should be updated accordingly to meet MaineDOT's standards.

Crash patterns for HCLs as well as each intersection and roadway segment identified in the scoping meeting are included in the TMP Section 7 Traffic Impact Study.

Section 3. Development Entrances and Exits.

B. TMP Standard: *MaineDOT standard is presented on page 17 of TMP regulations. C. Information about the measured stopping sight distance in each direction for entrance and exit locations as well as the posted speed for the location of each driveway.*

Sherwood Street is the only entrance to the proposed Roux development, all traffic entering and exiting the site must travel through the Veranda Street/Sherwood Street intersection. Accordingly, sight distance measurements should be provided directionally from the Sherwood Street approach. The posted speed limit on both Veranda Street and Sherwood Street should also be provided. The railroad bridge structure located near Kensington Street appears to limit sight distance looking right (northerly onto Veranda Street) from the Sherwood Street approach.

Sight distance for the Sherwood St approach is 600 ft looking right and 230 ft looking left from a point 10 feet back from the traveled way. The sight line from that point looking to the left is limited by on street parking. Posted speed limits for Veranda St and Sherwood St and the above sight distances are included in the Traffic Impact Study.

Section 7 – Traffic Study Requirements – General Comments

1. Design year for traffic study should be 2032 to match full build-out of student population, as noted in the TMP application on Page 2.
   The applicant acknowledges the comment. Section 7 Traffic Impact Study uses the 2032 future condition.
2. New traffic counts need to be collected at all study intersections in accordance with MDOT Traffic Count Standards (April 1st). Consideration should be given to collecting data that includes Portland School peak hours, suggested time periods recommended: 7AM to 9AM, 1:30 PM to 6:30PM. The traffic counts should be collected prior to the 15th of May to capture more accurately peak school traffic volumes within the study corridor.
   All intersections were recounted in 2023 during days school was in session.
3. Capacity Analysis for Washington Avenue needs to account for existing traffic adaptive operation in the Applicant's modeling.
   Comment acknowledged. The applicant verified signal operation in the field during each of the peak hours in advance of modeling for the TMP.
4. Neighborhood has concerns with overloading existing intersections that are already at or over capacity, how will this be dealt with (extent of mitigation?) by Maine DOT. **The operation at these locations is presented in the Section 7 Traffic Impact Study.**
5. Capacity – Should the Applicant be required to evaluate the operations (i.e., queueing, weaving, merging) of the 295 NB off-ramp to Washington Avenue and clearly define and implement required improvements.

The I-295 exit 8 northbound ramp is included in the study area in regards to operation at the intersection of Washington Avenue at Veranda Street. MaineDOT has included weaving analysis as a part of numerous studies of the I-295 corridor including the I-295 Corridor Update in 2018.

6. How will the Roux project minimize intrusion of site generated trips onto local neighborhood streets, for example Sherwood Street?
   Traffic calming measures on Sherwood Street are recommended in the Section 7 Traffic Movement Permit to minimize intrusion of site generated trips.
7. Parking – Applicant should be required to implement a shuttle service to an off-site satellite parking lot to lessen the site's parking demand vs. constructing a large parking structure of approximately 700 parking spaces, which will encourage single-occupant travel impacting the Washington Avenue and Veranda Street corridors. A well designed and operated shuttle program would significantly lessen the traffic impacts of the proposed project.
   As outlined in the Section 7 Traffic Movement Permit, the parking garage will now include fewer spaces. Transportation Demand Management (TDM) will be used to reduce the parking demand and encourage use of alternative modes. Transit served park and ride locations are being investigated as one of many TDM measures.
8. The TMP Application states there will be a charge for parking which will further encourage higher volumes of single-occupant vehicle travel and increased on-street parking on neighborhood streets. The Applicant needs to provide a program whereby there will be no on-street parking on local neighborhood streets by users of the Roux Institute.
   The plans for Sherwood St east of Veranda St have no street parking. The applicant supports working with the City to implement a neighborhood parking program to mitigate this concern.
9. Transit – Applicant needs to propose and confirm actual improvements that are realistic, and can actually be implemented and will increase transit ridership and reduce vehicle trips. The statement in the TMP is vary vague "*the applicant is in discussions with METRO to reduce headways and other improvements to transit in the area.*"
   The applicant has committed to building a bus shelter and has committed to bringing a bus route into the site to encourage transit usage. In addition, at this time, all students, faculty and staff are eligible for subsidized transit passes to further encourage transit use.
10. Applicant needs to clearly define what off-site multimodal improvements will be made for this phase of development. The application doesn't define what improvements will be constructed and the timeline for those improvements.
    As outlined in Section 7 Traffic Impact Study, the applicant is committed to the reconstruction of Sherwood Street between the site and Veranda Street to include bicycle and pedestrian accommodation. In addition, the applicant is committed to traffic calming on Sherwood Street between Presumpscot and Veranda to reduce any cut through trips.

11. Safety / Crash Mitigation – The Applicant needs to clearly define and implement road safety improvements to mitigate the defined high crash locations.
12. **The applicant has identified 4 high crash locations along Ocean and Washington Ave. Safety recommendations can be seen in the traffic impact study.** Any signalized intersection with proposed improvements must include full traffic signal upgrades to current MDOT/Portland ATC cabinet and controller specs and shall install bi-modal flashing signs ("Turning Vehicle Yield To Pedestrians" and "No Turn on Red") where applicable, consistent with MaineDOT's current practices.
    Recommendations can be seen in the traffic impact study.

[East Deering Neighborhood for Responsible Development]

Suggested Neighborhood Recommendations for Consideration

1. **Install an actuated traffic signal, as previously discussed by the Applicant, to include both approaches of Sherwood Street at Veranda Street.**
   Signal warrants indicate that traffic volumes will not justify a signal by 2032.
2. **Require Applicant to design and construct traffic improvements to the Site approach of Sherwood Street that prohibits left-turn exit movements from the Site and discourages through traffic travel onto the non-site leg of Sherwood Street, in Phase I of the proposed development.**
   Cut through traffic on Sherwood Street will be addressed via traffic calming.
3. **The Applicant should be required to design and construct traffic improvements to the Washington Avenue and Veranda Street intersection that minimizes the increased levels of traffic congestion at the intersection that will result with development of the project. These improvements must be completed in Phase I.**
   The project related impact at this location is not significant, however, potential mitigation is discussed in the Section 7 Traffic Impact Study.
4. **Implement an effective Shuttle program in an off-site parking lot in Phase I of the project.**
   The applicant has an ongoing effort with MaineDOT to arrange for park and ride locations.
5. **Provide Campus connections to proposed bike and ped trails in Phase I of the proposed development.**
   The Roux Institute is committed to providing a shared use path around the entire site and along Sherwood Street to connect to the East Deering neighborhood.
6. **Construct with this phase of development the direct ramp connection from the exiting I-295 NB Washington Avenue off -ramp to the Roux campus.**
   This was not found to be a necessary mitigation item in the level of traffic in the phase.
7. **Provide free parking for neighborhood residents in the proposed parking garage during snow parking bans.**

The applicant will consider whether overnight parking by others could be accommodated.

8. **All required and proposed sidewalk improvements will be constructed with concrete.**
   All proposed sidewalk improvements will be designed in accordance with the City of Portland's Technical Manual.
9. **Require Applicant to explore the option of a neighborhood residential sticker program.**
   The applicant doesn't have the ability to unilaterally change parking rules around the site, but would be supportive of the neighborhood petitioning the city for added parking restrictions.
10. **Transit improvements mentioned in the Application (*"the applicant is in discussions with Metro to reduce headways and other improvements to transit in the area.")* should be defined as requirements of the TMP Permit. A formal signed agreement with METRO that clearly defines the proposed improvements should be required with issuance of a signed TMP permit for Phase I.**
    The applicant has committed to providing a transit shelter on the site to accommodate Metro entering the site to better serve the Roux Institute. Other improvements are included in the Metro Transit Together Plan. Beyond that, the Roux Institute has committed to continuing to work with Metro as a part of the TDM plan.
11. **Provide neighborhood with copy of Section 7 Traffic Study document and accept comments from the neighborhood.**
    Comment is acknowledged. The Section 7 Traffic Impact Study will be provided to the neighborhood when complete.

1. PROJECT SUMMARY

On behalf of Northeastern University (Applicant) and their agent, Initiative for Digital Engineering and Life Sciences (IDEALS), Woodard & Curran is pleased to submit this Major Site Plan Application to develop Phase 1 of the Roux Institute at Northeastern University campus. A letter authorizing IDEALS and Woodard & Curran to act as the agent on behalf of the Applicant is attached to this Section.

1.1 Background

The Roux Institute at Northeastern University is a graduate-level education, entrepreneurialism and research center designed to build talent, spur innovation, and drive economic growth in Portland, the state of Maine, and the Northeast. The Institute launched in 2020 and is temporarily located in leased space in Portland. A permanent campus for the Roux Institute is essential to fulfill its educational and economic potential. Northeastern University seeks to create a campus that allows for continued growth of the education, research, entrepreneurial, and collaborative programs of the Roux Institute while providing space to support those programs and serve the community.

After completing an exhaustive four-year search both on and off the Portland peninsula and its surrounding area, IDEALS acquired land formerly occupied by the B&M Baked Beans facility along the Portland waterfront. IDEALS is currently in the process of transferring the property to Northeastern University, and a copy of the Purchase and Sale Agreement is included in Section 4. The conveyance of the property will occur subsequent to Site Plan approval and prior to application for a building permit.

As described in more detail herein, the City Council approved The Roux Institute at Northeastern University's Institutional Overlay Zone on February 6, 2023. This Site Plan Application is the first step in carrying out the goals set forth in the Institutional Development Plan and Regulatory Framework.

1.2 Campus Vision

Northeastern University's campus will integrate graduate education in technology and science with groundbreaking research and a wide range of collaborations to spark innovation and economic development. The campus is being designed at a scale that will facilitate learning, collaboration, and research breakthroughs and innovations, attract start-up businesses, and strengthen existing Maine businesses and institutions.

Creation of a new campus provides the opportunity to establish a people-oriented space right from the start. The campus interior will prioritize people over cars by creating a pedestrian-friendly landscape supported by multi-modal programs that provide incentives for alternative transportation options. The campus will improve site resilience and sustainability by replacing much of the existing pavement and rooftops with green space, adopting resilient approaches along the coastline, and incorporating sustainable building practices.

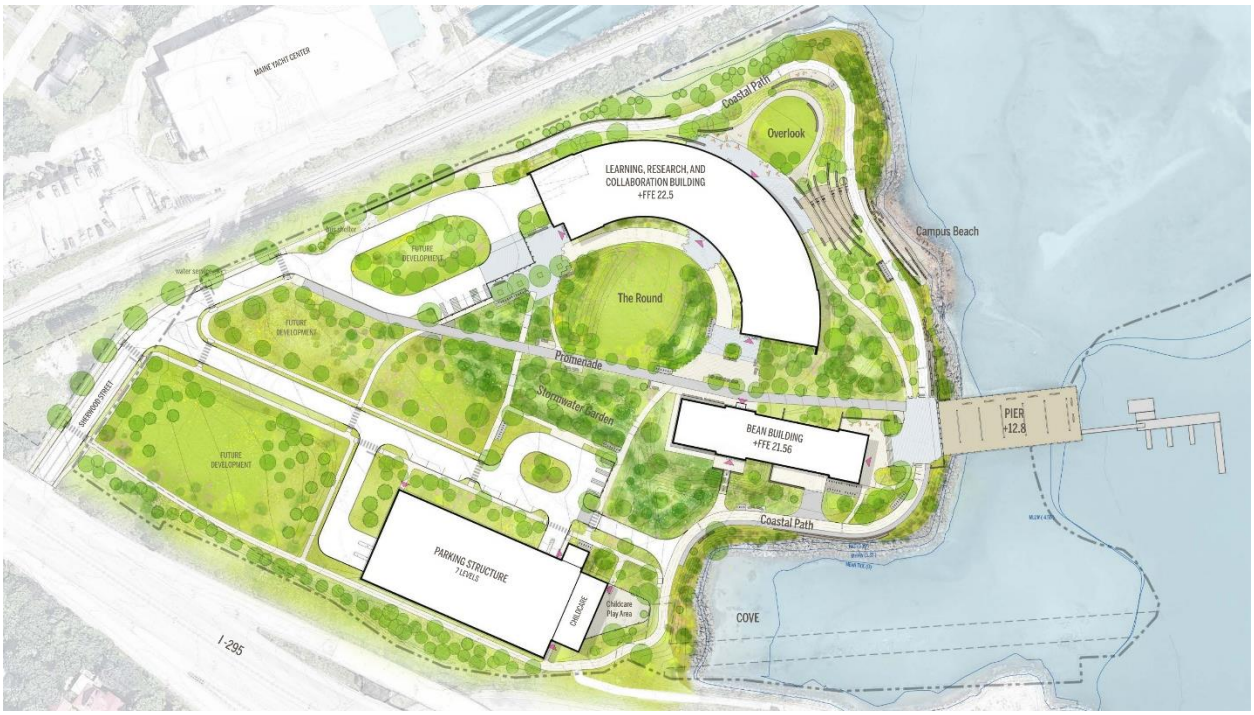


Figure 1-1: Rendered Site Plan

1.3 Rezoning

In 2022, Northeastern University and IDEALS began the process to rezone the site with an Institutional Overlay Zone (IOZ) for the campus at 1 Bean Pot Circle in Portland, Maine (the Site). The IOZ rezoning process involved the development of a long-range plan for the institution, known as an Institutional Development Plan (IDP), that informs the eligible institution's Regulatory Framework, which codifies supplemental zoning regulations to the base zoning district. The Regulatory Framework includes standards related to dimensions, design, transportation and parking, environment, neighborhood integration and engagement, mitigation of future impacts, and on-going monitoring. In addition to zoning amendments associated with the IOZ designation, IDEALS simultaneously sought a zoning map amendment to change the underlying zone for the Site to B-5 Mixed-Use Business. The City of Portland Planning Board approved Northeastern University's Campus IDP on November 22, 2022, and the Portland City Council subsequently and unanimously approved the zoning map and text amendments to establish the IOZ regulatory framework and change the underlying zone to B-5 Mixed-Use Business on February 6, 2023.

The extensive IDP development review process allowed Northeastern University and IDEALS to memorialize the long-term strategic plan for the Campus in consultation with the Portland community at the very outset of development. As required by the approved regulatory framework, regulatory requirements associated with the IOZ will be addressed during the Site Plan Application process for each phase of development.

1.4 Historic Preservation

The Site was occupied by residences and a lobster cannery prior to 1913, when Burnham & Morrill (B&M) relocated its food manufacturing operations to the Site from Franklin Street. Shortly thereafter, the flagship

cannery building (Bean Building) was constructed, as well as the adjacent codfish building on the pier. The Site was further improved with buildings and parking to support operations. Due to its industrial use, the Site is surrounded by security fencing, and the interior and waterfront have historically been inaccessible to the public. Canning operations ceased in 2021.

In 2022, IDEALS submitted a nomination to the City's Historic Preservation Board to designate the Bean Building as a local landmark. The five-story 1913 Bean Building was designated as a landmark by the City Council on October 17, 2022. During the Historic Preservation process, it was determined that the existing Codfish Building and pier were unsalvageable and will be demolished upon approvals from the City of Portland, Board of Harbor Commission, Maine Department of Environmental Protection and Army Corps of Engineers. This Site Plan Application proposes construction of a new pier in its place.

1.5 Existing Site

The Site includes approximately 13 acres above mean higher high water (MHHW) line as well as an adjacent 11 acres of submerged lands. The majority of the Site is developed land, with limited areas of natural vegetation. Approximately 9 acres of land above the mean higher high water line are impervious (paved areas, building roofs, foundations, etc.). The remaining 4 acres of permeable area include lawn and approximately half an acre of vegetated non-lawn area adjacent to the rail corridor abutting the Site to the east.

On May 23, 2023, IDEALS received a demolition permit from the City and commenced demolition of all existing buildings on the Site, retaining only the Bean Building and the Codfish Building.

The Site is located within Portland's East Deering neighborhood, at the end of Sherwood Street, adjacent to Maine Yacht Services and near a residential area of single and multi-family homes (three-story apartment buildings) and a commercial node featuring restaurants, bars, automobile mechanics, and offices. While proximate to these areas, the Site is remarkably buffered; I-295 to the west, state-owned vacant parcels to the north, a disused rail corridor and marine business to the east, and Casco Bay to the south collectively surround the property. Access to the Site from Veranda Street is via Sherwood Street, through a 40-foot-wide highway underpass.

1.6 Proposed Project Description – Phase 1

Phase 1 includes construction of a 238,000-sf Learning, Research & Collaboration Building, renovation of the 58,000-sf Bean Building to create a business incubator space, construction of a 234,450-sf parking garage (692 vehicular and 66 bike spaces), development of a 7,500-sf childcare facility, replacement of the pier, development of a coastal path, and other site improvements. Meaningful public open space will be established in this first phase to ensure public access to this signature waterfront amenity.

1.7 Attachments

- Agent Letter
- Location Map

Northeastern

October 25, 2023

Sam Reiche
Chief Operating Officer and Head of Real Estate
Initiative for Digital Engineering and Life Sciences (IDEALS)
100 Commercial Street, Suite 40
Portland, Maine 04101

Dear Sam:

Northeastern University is preparing plans for the first phase of development at the Roux Institute, located at 1 Bean Pot Circle in Portland Maine. Northeastern University is authorizing the Initiative for Digital Engineering and Life Sciences (IDEALS) and Woodard & Curran, Inc., to assist in the preparation of land-use permit applications for this project. IDEALS and Woodard & Curran are authorized as our agent to represent Northeastern University in addressing questions on the plans and applications for this project.

Sincerely,

Thomas E. Nedell,
Senior Vice President for Finance and Treasurer

Office of the Senior Vice President Finance

177 Huntington Ave.
360 Huntington Ave.
Boston, MA 02115

617.373.2240
fax 617.373.4728

finance.northeastern.edu



Woodard & Curran	Client Info: IDEALS ROUX INSTITUTE PHASE 1 1 BEAN POT CIRCLE PORTLAND, ME 04103	Job No: 0233482.00 Date: SEPT 2023 Scale: 1" = 24,000' Des by: JM Drn by: JM Chk by: AL	Drawing Title SITE LOCATION MAP	Drawing Number 0233482.00 Location Map

12 Mountfort Street
Portland, Maine 04101
www.woodardcurran.com

T 800.426.4262
T 207.774.2112
F 207.774.6635

Att. A1

February 5, 2024

Zach Powell, Senior Planner
City of Portland
389 Congress Street, 4th Floor
Portland, Maine 04101

Re: Response to City Staff Comments –Roux Institute at Northeastern University
Project ID PL-002724-2023

Dear Zach:

Thank you for coordinating the review of the Major Site Plan and Site Location of Development (SLOD) Application for the Roux Institute at Northeastern University. The following document provides written responses to the city review comments. Similar to the comments received, our responses are provided in tables in the following sections:

- Attachment 1. Site Plan Review Comment Responses
- Attachment 2. Zoning Review Comment Responses
- Attachment 3. Peer Review Comment Responses
- Attachment 4. Sustainability Charter Comment Responses

The following supporting documents have been uploaded to ProjectDox:

- Neighborhood Meeting Summary
- Community Advisory Group Meeting Summary
- Construction Management Plan, revised per comments received.
- Full size drawings of the following Figures:
- Figure 3-14 Planting Zone Plan
- Figure 3-17 Site Circulation Plan, revised per comments received.
- Figure 3-18 Areas of Public Open Space Plan, revised per comments received.
- Figure 3-24 Codfish Building Interpretive Elements
- Figure 5-1 Bike Amenities and Circulation
- Figure 5-2 Emergency Access Routes
- Figure 5-3 Bean Building Service Access
- Figure 5-4: Exterior Bicycle Parking

Also attached, please find updated floor plans for the proposed parking garage. These plans have been revised to eliminate the lowest level of vehicular parking spaces, thereby reducing the total parking on site from 706 to 641. The revised parking supply is consistent with projected parking demand at project occupancy and the resulting mode shares at full occupancy are in alignment with the mode shares outlined in the IDP.

If you have any questions or require additional information, please do not hesitate to contact me at (207) 558-3708 or dcameron@woodardcurran.com.

Sincerely,

WOODARD & CURRAN, INC.



Denise Cameron, P.E.
Project Manager

cc: Sam Reiche, IDEALS

1. ATTACHMENT 1: SITE PLAN REVIEW COMMENT RESPONSES

Site Plan Review Standards (Sec. 14.6)		
Transportation Standards (Sec. 14.6.1)		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Impact on Surrounding Street Systems	Continue to update application materials in conjunction with comments and recommended mitigation strategies as part of the TMP review process.	Acknowledged. No action at this time.
Access and Circulation	Update application materials to satisfy comments provided in Attachment 3. Continue to update application materials in conjunction with comments and recommended mitigation strategies as part of the TMP review process.	See Attachment 3 table for response.
Public Transit Access	No updates required.	This standard has been met.
Parking	Submit a parking demand analysis that provides evidence supporting the proposed parking supply. As necessary, update the TDM plan for any changes resulting from the parking demand analysis.	Parking demand is calculated hour-by-hour based on projected arrivals and departures. Because there are no components of this program that would create overnight parking (i.e., residential units or hotel rooms), parking demand is zero at the beginning of each day. As detailed in the TMP, time-of-day patterns for graduate student, affiliated user, special event, and some faculty

		trips were developed based on scheduling expectations and observed patterns at the current Fore Street campus. For these users, parking demand is calculated as the balance of arrivals and departures multiplied by the vehicle mode share. For other uses, standard rates from the Institute of Transportation Engineers Parking Generation Manual were applied. These are provided as a peak parking demand and the percent of peak demand at each hour of the day. Mode shares and internal trip reductions were applied using identical factors as for trips. At opening year, parking demand peaks at 601 spaces. Were auto mode share to remain at the TMP levels (80% for students, 90% for all others), peak demand would increase to 881 at completion of the TMP program. To be conservative, trip generation was calculated this way, however this level of demand exceeds parking supply. For this reason, the TDM plan specifies a program of strategies to reduce vehicle mode share below the levels in the TMP. The university will need to progress towards the mode shares in the TDM plan to keep demand within the site's parking constraints.
Transportation Demand Management	Update TDM plan to satisfy comments in Attachment 3.	See Attachment 3 table for response.
Environmental Quality Standards (Sec. 14.6.2)		

Standard	*Updates Requested by City Staff*	*Comment Response Provided by Applicant*
Preservation of Significant Natural Features	Update the site plan set and survey to identify all significant natural features on and immediately adjacent to the site. Updates should specify the approximate boundaries of habitats of endangered species.	Acknowledged. These updates will be included in a subsequent drawing submission.
Landscape Preservation	Submit a tree survey for the site that meets the standards of §4.3.1. of the Technical Manual.	A survey of existing trees 10" DBH or higher is being prepared and will be provided in a subsequent submission.
Site Landscaping and Buffers	Update application materials to provide 8-12 street trees within the City right-of-way or through an alternative strategy meeting the standards of §4.6.4. of the Technical Manual. If alternatives are proposed, alternative street tree planting strategies are subject to the review of the City Arborist and may require additional documentation for future preservation/evidence that proposed planting sites are unlikely to be redeveloped in the near future.	The team is working to designate street trees on the plan in accordance with city requirements. We will also provide substitutions for all maple trees, as requested. This plan will be provided in a subsequent submission.
Water Quality, Stormwater Management and Erosion Control	Update the application to satisfy comments from Wright Pierce.	See Attachment 3 for responses to Wright Pierce comments.

Public Infrastructure and Community Safety Standards (Sec. 14.6.3)		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Consistency with City Master Plans	No updates required.	This standard has been met.
Public Safety and Fire Prevention	Email the Department of Public Works to begin the E-911 address process, with Zach Powell copied on the email. The applicant team shall work with the Department of Public Works to identify any additional steps that need to be taken before site plan approval.	The applicant will initiate E-911 address process prior to planning board hearing.
	Update architectural drawings to demonstrate how the western portion of the perimeter access loop is actively integrated into the overall campus design and how the site design enhances the overall experience of using the perimeter access loop for cyclists and pedestrians.	The architectural/landscape drawings are being updated to widen the perimeter shared path to a minimum of 12 feet. A typical section of the revised perimeter path has been added to the attached Figure 3-17: Site Circulation Plan. The architectural drawings are being updated to add screening to the first two levels of the Structured Parking building to enhance pedestrian and cyclists' experience. These updated architectural and landscape drawings will be provided as part of a subsequent submission.
Public Utilities	Submit ability to serve letters from utilities when available and provide any additional information requested by the Portland Water District, as requested.	A request for ability to serve letters has been provided to Portland Water District and the Department of Public Works. The Applicant team has also been actively working with these utilities to review the proposed project design.

		The ability to serve documentation will be provided upon receipt.
Site Design Standards (Sec. 14.6.4)		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Massing, Ventilation and Wind Impact	No updates required.	This standard has been met.
Shadow	No updates required.	This standard has been met.
Snow and Ice Loading	No updates required.	This standard has been met.
View Corridors	No updates required.	This standard has been met.
Historic Resources	Submit an updated copy of the site plan set that shows the limits of the designation boundary.	The plan set will be revised to show the limits of the designation boundary. Revisions are in progress and will be provided as part of a subsequent submission.
	Update application materials to satisfy Board and Staff comments from the December 6, 2023 Historic Preservation Board Meeting. Await comments from the Historic Preservation Board and Historic Preservation Staff.	Application materials will be updated in response to Staff comments from 12/6/2023 HP Board Meeting and any subsequent comments from HP Board and HP Staff. An updated set of documents is expected to be issued around February 12, 2024 for HP Staff and Board review.

Exterior Lighting	Update the application to include two street lights that meet the standards of §10.2 and Figure X-1 of the City's Technical Manual or seek waivers.	The applicant assumes the two streetlights requested are for Sherwood Street. Clarification will be provided as part of a subsequent submission.
	Update application to have site lighting meet the standards of §12.3 of the Technical Manual.	The applicant used Section 12.3 of the Technical Manual as the basis of design. The lighting design and photometric plans are currently under review and updates will be provided as part of a subsequent submission, if required.
	Update photometric plans to provide average illumination, uniformity ratio, and maximum illuminance at ground level around the Structured parking & preschool facility building.	The lighting set will be updated as requested and will be provided as part of a subsequent submission.
	Confirm the CCT that will be used for each proposed luminaire.	Confirmed. All site lighting will be LED and shall not exceed 3000K Correlated Color Temperature (CCT). The applicant will clarify on drawings as part of a subsequent submission
	Add information on luminaire E11 to the Luminaire Schedule table.	The lighting Luminaire Schedule table will be updated to add information on luminaire E11 and will be provided as part of a subsequent submission
Noise and Vibration	No updates required.	This standard has been met.
Signage and Wayfinding	No updates required.	This standard has been met.

Design Standards	Please refer to Roux IOZ design comments in the Zoning worksheet.	Design review comment responses are provided in Attachment 2.

2. ATTACHMENT 2: ZONING REVIEW COMMENT RESPONSES

Zoning Use Review (Article 6)		
Zoning Performance Standards (Sec. 6.8)		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
§6.8.8(A)	Update architectural drawings to include screening for the first two levels of the Structured parking & preschool facility building.	The architectural drawings are being updated to add screening to the first two levels of the Structured Parking building and will be provided as part of a subsequent submission.
Zoning Dimensional Review (Article 7)		
Dimensional Standards (Table 7-A – Table 7-H)		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Structure height	No updates required.	This standard has been met.
Supplemental Dimensional Standards (Sec. 7.4)		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
7.4.3(B)(2)(c)	No updates required.	This standard has been met.

Roux IOZ Standards (§8.5.7)		
Applicability Standards (§8.5.7(A))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Applicability	Revise application materials to satisfy requested updates identified in Attachment 3.	See Attachment 3 table for response.
Phasing and Monitoring (§8.5.7(B))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Monitoring and Amendments	Submit an updated copy of the IDP incorporating the proposed changes identified in Attachment 5.	The IDP will be updated as requested and will be provided as part of a subsequent submission
Public Space	No updates required.	This standard has been met.
Minor & Major Amendments	No updates required.	This standard has been met.
Uses (§8.5.7(C))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***

Overview of Uses	No updates required.	This standard has been met.
Community Engagement and Connectivity	Submit a narrative and/or figures that demonstrate how the Sherwood Street connection will achieve connectivity and community engagement with the surrounding neighborhood.	The applicant has proposed to reconstruct Sherwood Street between Veranda St and the site driveway. The work will include a shared use path along the north side of Sherwood Street and a sidewalk along the south side of Sherwood Street, providing direct connections to the neighborhood and the signed bike route on Veranda Street. The applicant is invested in maximizing nonmotorized connectivity, and the site is ready for future connections as they become available. The landscape drawings are being updated to widen the perimeter shared path to a minimum of 12 feet. A typical section of the revised perimeter path has been added to the attached Figure 3-17: Site Circulation Plan. Lighting, pavement markings, and wayfinding will be provided to support community connectivity.
Ground-floor Uses	No updates required.	This standard has been met.
Hotel Use Standards	No updates required.	This standard has been met.
Dimensional Requirements (§8.5.7(D))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***

Applicability	Update the application to comply with zoning performance standards and IOZ dimensional requirements.	See responses below.
Minimum and Maximum Street wall heights	No updates required.	This standard has been met.
Stepbacks	No updates required.	This standard has been met.
Building Length	No updates required.	This standard has been met.
Transitions and buffers	Update architectural drawings to include screening of all structured parking levels on the western façade.	The architectural drawings are being updated to add screening to the first two levels of the Structured Parking building and will be provided as part of a subsequent submission.
Transportation (§8.5.7(E))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Transportation Demand Management	Update the TDM plan to establish a framework for all envisioned phases of development, including a data collection plan. Staff encourages establishing a plan differentiating parking passes by types of garage users (e.g., Staff vs. student; resident vs. hotel guest vs. off-site visitor), as well as installing permanent bicycle & pedestrian counters at planned &	The TDM has been developed to establish TDM measures appropriate for each of the user types at the site rather than by building. This sets the framework for incorporating the anticipated TDM approaches for future phases. Measures have been developed to encourage the use of the full spectrum of alternative modes and are scalable to continue to be expanded as the site and other opportunities are developed.

	potential shared-use entrances to the site.	
Traffic Movement Permit	Update application to provide materials requested in Attachment 3 and continue to coordinate with MaineDOT & City staff for future comments & requested revisions.	See Attachment 3 table for response.
Bicycle and pedestrian access and safety	Submit an updated Transportation, Access, and Circulation Plan as a separate document to include pedestrian facilities, as well as contemplated connection points to the rail trail and Tukey's Bridge. Contemplate connections can be differentiated with a dashed line and for Tukey's Bridge, do not need to provide a finalized alignment.	See Attached Figure 3-17: Site Circulation Plan.
	Update application materials to address comments from Bruce Hyman regarding the proposed design of Sherwood Street.	See Attachment 3 table for response.
	Update floor plans for the Structured parking & preschool facility building to provide additional detail on interior connections between building	The Structured Parking and Daycare facility are separated and are not connected. The site plan drawing is being updated to further

	uses, and ingress/egress points for pedestrians.	illustrate ingress/egress access for pedestrians and will be provided as part of a subsequent submission.
	Update the application to include a minimum perimeter access loop width of 20 feet and a minimum 12-foot width for all other pedestrian facilities.	The design team has reviewed the width of pathways and is currently revising the plans to widen sections of the perimeter path to a consistent 12 feet. A cross section of the perimeter path has been added to Figure 3-17: Site Circulation Plan, illustrating approach for pavement markings to accommodate shared use. This revised width meets or exceeds other existing trail networks within the City of Portland and will be suitable for the anticipated bike/ped volume. Increasing all pedestrian facilities to 12 feet and perimeter path to 20 feet is not warranted given anticipated use levels. The suggested widening would result in an additional 0.7 acres of impervious surface. Where possible, we are seeking to reduce impervious area to improve quality of our water resources.
Parking	Updated application materials to include a parking ratio based on the parking analysis.	Excluding the parking structure, total planned building area is 303,600 square feet. This equates to a peak parking demand of 2.9 spaces per thousand square feet. For comparison, the standard Institute of Transportation Engineers rate for a general office building is 2.39 spaces per thousand square feet. While the site includes a large office component, classrooms are a more person-intensive use of space. The academic uses drive parking demand somewhat higher than a pure office development on this site.

	Identify where the estimated parking demand of 881 spaces for 2032 is in the TMP application.	This is discussed beginning on page 9 of Chapter 6 of the TMP Application.
Circulation	Update the application to include at least a 20-foot wide shared-use path for the entirety of the perimeter access loop.	See above comment response *§8.5.7(E) Transportation: Bicycle and pedestrian access and safe*
Environment (§8.5.7(F))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Open Space	Submit a site plan sheet that shows the proposed public open space with the total amount of open space (in acreage).	This information has been added to the attached Figure 3-18 Areas of Public Open Space Plan
	Submit a draft public access easement for the perimeter access loop and buffer around the loop for review by the Planning Board and Corporation Counsel.	We will provide a draft public easement to Corporation Counsel, under separate cover. Figure 3-18 Areas of Public Open Space has been revised to extend the public access easement along the full length of the perimeter loop.
Sustainability and Resilience Charter	Update application materials to respond to the comments in Attachment 4.	See Attachment 4 table for response.

Lighting	Submit interior lighting plans, sequence of operations, and control details for the Cannery Building and the Structured parking & preschool facility building will be required to confirm compliance with ANSI/ASHRAE/IES Standard 90.1-2022.	The Structured Parking lighting set demonstrates compliance with ANSI/ASHRAE/IES Standard 90.1-2022 and will be provided as part of a subsequent submission. The Bean Building and Daycare facility are currently Shell+Core only. Compliant lighting plans will be provided in future building permit submissions once the 'fit out' designs of the Bean Building and Daycare facility are completed. "
Design Flood Elevation (DFE)	Submit the FFE for the preschool facility.	The FFE elevation of the daycare is 16. This FFE elevation will be added to the plans of the Daycare Center and will be provided as part of a subsequent submission.
Shoreline Stabilization & Natural Resource Impacts	No updates requested.	No action required at this time.
Bird-Safe Design	Update architectural drawings for the Learning and Research Center to clarify how the proposed laminated glass fins identified as GL-C1 will include a bird-safe treatment/design with American Bird Conservancy and Cornell Ornithology Lab standards.	The glass fins noted as type GL-C1 are Interior Structural Fins that are perpendicular fins supporting the facade. Accordingly, they pose no risk for bird collision.

	Submit updated detail drawings for the proposed new windows in the Cannery building to demonstrate that the windows or additional treatment to the windows will provide a bird-safe design with American Bird Conservancy and Cornell Ornithology Lab standards.	The applicant will provide more information as it pertains to bird safe glass in the Bean Building's new windows as part of a subsequent submission.
	Submit detail drawings for the proposed windows for the Structured parking & preschool facility building that demonstrate a bird-safe design with American Bird Conservancy and Cornell Ornithology Lab standards.	The applicant will provide a glazing schedule for the Structured Parking and Daycare Building that includes treatment for Bird Safe glass complying with Maine's Legislation LD 670 and conform to the City of Portland's Bird Friendly Ordinance as part of a subsequent submission.
Mitigation Measures (§8.5.7(G))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Off-Site Infrastructure	No updates requested.	No action required at this time.
Natural Resources	No updates requested.	No action required at this time.
Design (§8.5.7(H))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***

Waterfront	Submit a detailed elevation for Vestibule 3 for further Staff review.	The applicant is developing an updated elevation rendering that illustrates the details of Vestibule 3 as part of a subsequent submission.
Cohesive Campus	No updates required.	This standard has been met.
Historic preservation	Submit clarification on the intended function/s of the radius paved surface leading to the western façade of the Cannery Building, including, but not limited to, any ancillary, delivery, or utility functions.	Paved surface leading to the western facade of the Bean Building to be used for deliveries, trash/recycling pickup, and service access. In addition, this location will be used for bicycle access to a covered, indoor bike parking room. A required egress from the Bean Building will also exit onto this paved surface. See orange triangle graphics on "Figure 5-3 – Bean Building Service Access" designating these locations.
Connectivity	Submit a written description of uses along the coastal path in relation to motorized vehicles.	The coastal path around the Roux Campus is not intended for public vehicles other than emergency vehicles such as Ambulance and Fire Apparatus, and periodic service vehicles needing to access the Bean Building and pier. The coastal path is widened in these areas to accommodate emergency vehicles by incorporating a coble stone shoulder, as reflected in Figure 3-17.
	Submit a narrative discussing the need for multiple garage entrances.	The Garage entrances have been designed with consideration of vehicular flow and safety. The primary entrance will be the North entrance while the East entrance will be used primarily as an accessory entrance during peak hours.

Open space	Update the landscape plan to include native coastal shrubs and grasses along the waterfront edge.	An annotated list confirming native status of all plants within the coastal waterfront edge will be provided as part of our subsequent submission.
Sustainable practice	Confirm whether photovoltaic panels will be installed as part of Phase 1 for the Structured parking & preschool facility building.	Photovoltaic panels will not be installed as part of Phase 1 for the Structured Parking. However, infrastructure will be provided for possible installation in the future.
Resilience	Confirm whether a generator(s) will be included for the Structured parking & preschool facility building. If not, submit a narrative on how emergency power generation & elevator egress will be supplied.	The Elevator must be provided with standby power and comply with the emergency operation and signaling device requirements of the MUBC and NFPA 101. Emergency loads such as lighting and fire alarm will be provided by battery backup through either local battery units or central lighting inverter.
Building design	Submit architectural floor plans and proposed FFE for the preschool facility.	The FFE of the daycare will be 16. This FFE elevation will be added to the plans of the Daycare Center and updated architectural floor plans will be provided as part of a subsequent submission.
Building entrances	Update architectural drawings to include additional entrance articulation that supports wayfinding to publicly accessible entrances.	The applicant is developing updated architectural drawings and renderings that illustrate the details of publicly accessible entrances as part of a subsequent submission.
Mitigation of impacts	No updates requested.	No action required at this time.

Neighborhood integration (§8.5.7(l))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Neighborhood engagement	Submit the October 30th Community Advisory Group meeting minutes, including a complete list of Advisory Group members (present and not present) and a summary of discussion topics.	The following is submitted in response to comments and to demonstrate fulfillment of the commitment in the Institutional Development Plan to create and work collaboratively with a Community Advisory Group broadly reflective of interested constituencies in the City of Portland: <u>Community Advisory Group Members as of 10.30.2023</u> Tiffanie Bentley, Interim President, SMCC Sarah Boltz, Teacher, Presumpscot Elementary School Emma Bond, Portland Bike/Ped Advocacy Committee Charlie Collins, Friends of Payson Park Eamonn Dundon, Dir. of Advocacy, Portland Regional Chamber of Commerce Jason Judd, Executive Director, Educate Maine Cherie Juniwiecz, East Deering resident Cheryl Leeman, East Deering Neighborhood Association Adilah Mohammed, The Third Place Sarah Nadeau, Parent, Presumpscot Elementary School Bill Needelman, Waterfront Coordinator, City of Portland Jack Phillips, Executive Director, Portland Parks Conservancy Angie Taylor, Principal, Presumpscot Elementary School Aaron Townsend, Dep. Superintendent, Portland Public Schools Mike Tremblay, Director of Transit Development, Metro Steve Von Vogt, East Deering Neighborhood for Responsible Development Marie Caspard, The Island Institute

		<u>Positions yet to be filled but still in active recruitment:</u>
		Front Street Neighborhood representative
		Portland Housing Authority's Washington Gardens
		Portland Housing Authority's Front Street Development
		Rail representative
		
		The first meeting of Community Advisory Group was held on October 30, 2023 and a copy of the meeting notes are attached for your reference. Discussion topics of the first meeting included:
		- Overview of Roux Institute
		- Campus development plan and project status
		  o Phase 1 plans, site layout, buildings, landscaping, public access
		  o Institutional Overlay Zone and upcoming permitting process
		- Questions and discussion
		- Role of CAG
		- Draft Charter

	Provide confirmation of who is serving as the designated community contact. City Staff recommends that the community contact be identified on the project website along with the contact email provided at the bottom of each page.	Sam Reiche will continue to serve as the designated community contact, until that responsibility is transferred to the Roux Institute at Northeastern University on or around the time of campus opening. Responsiveness to community questions and input is encouraged through multiple channels on the www.rouxcampusportland.org website, including links to Subscribe to Updates, Leave Feedback and to Reach Out with questions or requests for a one-on-one meeting at info@rouxcampusportland.org. Requests are responded to promptly. This is standard and preferable to including a name and cell phone or email address for a specific individual and will

		facilitate a smooth transfer of responsibilities to Roux Institute at Northeastern University staff. The Reach Out link or Feedback link is on every page of the website. The website has received 10,159 unique visitors and has 320 followers who receive regular updates including notices of meetings, minutes, recordings and presentations.
	In keeping with the goal of the IDP to provide up-to-date information through the project website, review and update accordingly the timeline listed under the Info page of the project website.	The timeline is updated regularly to reflect current understanding of the project schedule. Accordingly, the anticipated date for campus opening is being changed to Fall, 2027.
Construction management	Submit a draft design for a dedicated construction webpage that includes communication methods through social media, texting, and hotline.	Northeastern University plans to establish a construction webpage similar to the one created for their recently completed research center, EXP (seen at this link: https://facilities.northeastern.edu/exp/[facilities.northeastern.edu]). As with the current Roux Campus website, www.rouxcampusportland.org, timely information on construction progress will be provided in the form of news and photos. Neighbors and the public can sign-up to receive regular email updates about construction status and other elements that could impact the neighborhood. Further details for the webpage and construction communication plans will be developed in collaboration with prime contractors and shared in advance of construction.

	A detailed construction schedule is referenced but is not attached to the Construction Management Plan. Submit a detailed construction schedule for City Staff review.	The attached Construction Management Plan has been updated accordingly.
	Submit a truck routing plan that identifies routes to and from the site, along with anticipated hours for deliveries. Temporary off-site storage locations should be identified as part of the truck routing plan.	The attached Construction Management Plan has been updated accordingly.
	Under Erosion Control and Preservation of Trees, clarify that temporary ESC measures shall be removed post-construction.	The attached Construction Management Plan has been updated accordingly.
	A wheel wash is included for the eastern construction entrance, but there is not a wheel wash for the southern entrance/ there is no connection for trucks to enter through the southern entrance and exit through the eastern entrance. Clarify what ESC controls are proposed for the southern entrance and if vehicular connections are proposed between the southern and eastern entrances.	The attached Construction Management Plan has been updated accordingly.

	On the Sitework/Foundation sheet of the Site Logistics Plan, the Codfish Building and Pier are identified to be demolished at a later date. However, the demolition of these elements is included in the site plan set. Clarify.	The attached Construction Management Plan has been updated accordingly.
Historic Preservation (§8.5.7(J))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Historic preservation review	No updates requested.	No action required at this time.
Required interpretive elements	No updates requested.	No action required at this time.

3. ATTACHMENT 3: PEER REVIEW COMMENT RESPONSES

Peer Review Comments		
Wright-Pierce Chapter 500 Review Comments		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Urban Impaired Stream Standard	As noted by the applicant, the proposed development is not located within an urban impaired stream watershed. Therefore, this standard is not applicable.	Noted.
Basic Standard	On Sheet C-002 of the Civil Plans, it appears the perimeter barrier falls within the edge of water called out on the plans. It is recommended to relocate the perimeter barrier to keep it out of the water.	The perimeter barrier will be revised as requested. The updated Civil Drawings will be provided as part of a subsequent submission.
	On Sheet C-002 Inset B of the Civil Plans, it appears the perimeter barrier crosses an existing building. Please confirm and revise as necessary.	The perimeter barrier will be revised as requested. The updated Civil Drawings will be provided as part of a subsequent submission.
Basic Standard	Please confirm whether de-watering is anticipated on the project. If de-watering is anticipated, please consider including a detail for de-watering treatment in the plans and discussion on proper discharge in the Stormwater Management Plan.	Dewatering is anticipated during construction. A detail will be added to the civil plans, to be submitted at a later date.

	In Appendix B of Maine DEP Chapter 500 it is noted that during post-construction ditches and swales should be inspected after heavy rains in addition to the spring and late fall. We would recommend including this additional inspection requirement in the Stormwater Inspection & Maintenance Plan.	The Stormwater Inspection and Maintenance Manual will be updated accordingly and provided as part of a future submission.
	We recommend the applicant updates winter construction dates on the Civil Plans Sheet D-401 to match Maine DEP requirements.	Sheet D-401 will be updated accordingly and provided as part of a future submission.
	If winter construction is anticipated, we would recommend including Winter Construction requirements outlined in Maine DEP Chapter 500 in the Stormwater Management Plan.	As noted on Sheet D-401, the contractor will be required to comply with the Maine DEP Erosion Control BMP Manual, which includes Winter Construction requirements. In our opinion, this satisfies the Maine DEP requirements.
General Standard	The applicant has demonstrated that they meet the treatment requirements for redevelopment project under the General Standards of Maine DEP Chapter 500.	Noted.
General Standard	We recommend the applicant confirm that proposed pre-treatment meets the requirement of proprietary systems under Appendix B of the Maine DEP BMP manual.	Sediment pretreatment rows designed by the manufacturer are provided for the proposed R-Tank systems in accordance with Chapter 500 requirements. A letter that demonstrates manufacturer review and approval of the design can be provided upon request.

Flooding Standard	The applicant states in the Stormwater Management Plan that the portion of the project which discharges to Casco Bay is eligible for a waiver under Maine DEP Chapter 500 Section 4.F(3) since it is discharging to a tidal waterbody. The drainage within Sherwood Street will not drain to Casco Bay; however, the applicant is requesting a waiver from the Flooding Standard for the campus development.	A waiver from the flooding standard is requested for the site development on private property, which drains in its entirety to Casco Bay. The project also requires upgrades to Sherwood Street, including the stormwater infrastructure in Sherwood Street. We are working with Public Works staff on the appropriate public stormwater infrastructure design in Sherwood Street.
Wright Pierce - General Comments		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
a.	Section 25 of the Site Location of Development Application states that "public notice requirements associated with Maine DEP Site Law do not apply "because the "City of Portland has Delegated Review Authority." Please confirm public notices will not be required for this application.	We understand that the public notice for SLOD is submitted concurrently with public notice for Site Plan by City Staff; therefore, a separate notice sent by the Applicant is not required.
b.	In Chapter 7.2 Bioretention Filters of Volume III. BMP Technical Design Manual, it is stated that the "geotextile fabric should be Mirafi 170N or equivalent." On Sheet D-407 of the Civil Plans, the filter fabric is called out as 140N. We recommend the applicant confirm that 140N is acceptable for this application.	We will review geotextile materials and revise as needed.

Wright Pierce - Stormwater Management Plan Comments		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
a.	It is stated in Section 3 of the Stormwater Management Plan that stormwater infrastructure on Sherwood Street is still being resolved. Please provide updated stormwater plans for Sherwood Street once completed.	We are working with Public Works staff on the stormwater infrastructure design in Sherwood Street; updated plans will be provided once completed.
b.	We would recommend the applicant provide stormwater modeling results to confirm bioretention ponds and R-Tank systems meet the requirements of Maine DEP Stormwater BMP Manual.	Based on conversations with Public Works staff in September 2023 prior to Site Plan submission, we understand that stormwater modeling documentation is not required due to the waiver of the Flooding Standard.
c.	In Section 32-38 City of Portland's Code of Ordinance, it is noted the City requires an annual inspection report completed by qualified post-construction stormwater inspector to be submitted to the Department of Public Works. It is recommended to include this requirement in the Stormwater Inspection & Maintenance Plan.	The Stormwater Inspection and Maintenance Plan will be updated accordingly and provided as part of a subsequent submission.
Wright Pierce – Plan Comments		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
a.	On the Sand Filter details on sheet D-405, there is a callout for "underdrain to outlet structure (size, location,	The underdrains for all proposed Subsurface Sand Filters will discharge into outlet control

	and length to be determined by Engineer of Record)." On Sheet C-302 the underdrains for the sand filters are shown discharging to daylight and not to a structure. Please confirm intent of detail and revise as appropriate.	structures. Underdrain connections will be clarified in revised Civil Drawings to be provided as part of a subsequent submission.
b.	On sheet C-304, one of the structure tables is cut off and appears to be missing OCS-9. Please provide and updated table showing all OCS information.	The structure table will be updated accordingly. The updated table will be provided with revised Civil Drawings provided as part of a subsequent submission.
c.	Information on SD103 should be provided on Sheet C-304 in the pipe table.	The pipe table will be updated accordingly. The updated table will be provided with revised Civil Drawings provided as part of a subsequent submission.
d.	It appears Subsurface Sand Filter 4 collects drainage from the road through CB14. Please verify if a hydrodynamic separator is required for Subsurface Sand Filter 4.	CB14 is located along a gated access way that will only be used occasionally for service and emergency access; therefore, it is our opinion that the drainage area to CB14 does not meet the criteria that would require a separate pretreatment structure.
e.	We would recommend adding a detail for pipe insulation of shallow pipes.	This detail will be added to the revised Civil Drawings, which will be provided as part of a subsequent submission.
f.	We would recommend adding a detail that shows horizontal and vertical utility separation requirements.	This detail will be added to the revised Civil Drawings, which will be provided as part of a subsequent submission.

g.	On sheet L4.00, consider outlining bioretention cell location as it relates to the proposed vegetation. Confirm native shrubs and perennials are located within the bioretention area, per Maine DEP – Chapter 7.2 – Bioretention Filters.	The bioretention cells will be outlined on Sheet L4:00 and included in a subsequent submission.
Tom Errico, P.E. – NE Traffic Eng. Director Review Comments		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
1.	The applicant shall provide the parking demand analysis back up information in support of the project's parking supply.	With the reduction in the size of the garage, the resulting parking supply (641) is in alignment with the projected demand (581) at project occupancy.
2.	The applicant shall provide sight distance measurements at the Veranda Street/Sherwood Street intersection.	Sight distance looking north from Sherwood Street exceeds the minimum 250 feet (Maine DOT standard at 30 mph). However, when exiting Sherwood Street, the sight distance looking left (south) is blocked by the on-street parking and is only visible to 230 feet. As in most urban areas, in actuality, vehicles pull up further than 10 feet behind the edge of pavement. If existing vehicles pull up to edge of roadway, beyond the impact of the parked vehicles on the south side of Veranda Street, sight lines increase dramatically.

3.	The alignment/configuration of the internal three-way STOP intersection is a concern given the heaviest egress traffic movement will have to make a hard left maneuver. I would be interested in the evaluation of a small roundabout at this location.	A small roundabout will create right of way impacts and there are concerns with buses traversing over a domed truck apron.
4.	I support a waiver for the size of parking spaces in the garage given low vehicle turnover.	Noted.
Janine Ba – DPW Transportation Development Review Comments		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
1.	DPW agrees with the proposed cross sections provided by the Transportation Program Manager for Sherwood Street that includes a 10' shared use path and feel it should be continued onto the campus and transition at the intersection.	The Sherwood St design will be updated to include a 10' shared use path.
2.	The applicant shall label the roadway (Sherwood Street) ROW and centerline on the plan view and cross section sheets.	Labels will be added to the Civil Drawings to be provided as part of a subsequent submission.
3.	When printed it can be hard to distinguish between existing and proposed elevation. All elevations in the plan set need to be labeled as existing or proposed to prevent confusion. Update the plan set by using EX. Or	Plans will be updated as requested.

	parentheses () to distinguish between the type of elevation.	
4.	DPW feels a traffic circle would work better at the intersection pictured on page 2/2 of email from Janine Ba dated 12/20/23.	A small roundabout will create right of way impacts and there are concerns with buses traversing over a domed truck apron.
5.	DPW has concerns with the minimum 5ft sidewalk width proposed for the site. The sidewalk width should be sized to meet pedestrian demand for the campus.	The Sherwood St design will be updated to include a 10' shared use path on the north side of the street.
6.	Revise the plans to adjust the -LW- within the property or provide documentation that shows the applicant has permission to be on the property.	At this time, the proposed work will occur entirely within the Applicant's property and City Right-of-Way. The limits of work will be adjusted accordingly on Civil Drawings provided as part of a subsequent submission.
Mark Reiland – City Arborist Review Comments		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
1.	Please include location, species, and DBH of existing trees on site and indicate tree protection measures for existing trees to be preserved. Groups of trees or wooded areas to be preserved can be indicated by showing the location of the collective group canopy dripline.	A survey of existing trees of 10" DBH or higher is being prepared and will be provided in a subsequent submission. The existing trees will not remain, as they will be impacted by the proposed grading and site improvements.

2.	Please choose alternative species for the proposed maple selections; Silver Maple, Red Maple, Sugar Maple and Freeman Maple. The urban forest in the greater Portland area is over saturated with maple (>30% by count) creating a high degree of susceptibility to Asian Longhorned Beetle infestation.	Subsequent submissions of the landscape plans will include substitutions for all maples.
Transportation Demand Management Plan Preliminary Comments Markup (dated 12/5/2023)		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Section 1.1.2	Will the full capacity of the parking garage be available during Phase 1? Will parking costs be market rate? If so, for whom? This is key to understanding incentives/ disincentives to driving.	With the reduction in the size of the garage, the resulting parking supply (641) is in alignment with the projected demand (581) at project occupancy.
Figure 2 Campus Transportation Access	The M-UP substandard width of 6′ for the beginning. Substandard bike lanes proposed on Veranda Street, not a M-UP.	Sherwood Street will be designed to accommodate a shared use path as requested by the City of Portland.
2.2.1 Existing Conditions	Confirm Sherwood Street right-of-way width.	ROW is 3 rod or 49.5 feet.
2.2.3 Potential Future MaineDOT Infrastructure	Discuss Berlin/SLA pathway and Veranda St bike lanes. Confirm shared-use path width.	The Veranda Street bike lanes are mentioned in 2.3.4 which discusses other potential future infrastructure as it is not a MaineDOT project.

2.3.1 Existing Conditions	Add alternative biking route around Baxter Boulevard via Back Cove Trail to narrative.	Agree, bicyclists can also use the Back Cove Trail or Baxter Blvd as a less direct route into the Portland Peninsula.
Figure 3. 15 Minute Bike Shed Zone	Quite skeptical this is the 15 min. bike shed & barely even drive shed. Confirm bike shed boundaries.	Bike shed boundaries will be updated/confirmed. Updates to this figure can be provided as part of a subsequent submission, as necessary.
2.4.2.2 Other Metro Opportunities	Confirm at what level transit passes will be subsidized for students, staff and faculty.	The Roux Institute is currently running a pilot program with METRO. Bus passes will be subsidized long term and the level of subsidy will be determined based off the pilot program.
2.7 Existing TDM Efforts	Confirm at what level transit passes will be subsidized for students, staff and faculty.	The Roux Institute is currently running a pilot program with METRO. Bus passes will be subsidized long term and the level of subsidy will be determined based off the pilot program.
	Confirm the rate students will be charged per parking space.	Users will be charged market rates for parking.
Table 2 Transportation Survey Mode Split Data	What was response rate to the Surveys? Is there a meaningful breakdown by students vs staff/faculty/others since mode share targets are different for each?	The surveys include a demographic breakdown between students, faculty, staff, others, ect.

4.3 Proposed Parking Supply/Demand	Confirm how interim phasing of allocated parking spaces will be managed (e.g. restricting parking to 561 within a garage with a capacity of 692 spaces during Ph 1).	With the reduction in the size of the garage, the resulting parking supply (641) is in alignment with the projected demand (581) at initial project occupancy. No further parking modification is required.
Table 5 Drive Mode Split Targets	Does "Drive" include all carpool occupants?	No, only the driver counts towards the percentages in this table.
6 Mode Split Target Strategies	Table 7 is not provided. Revise last sentence on page 20 to confirm intent.	Table number was mislabeled and should read Table 6.
Table 6. TDM Strategies - Commitments	What is the level of subsidy? 100%?	The Roux Institute is currently running a pilot program with METRO. Bus passes will be subsidized long term and the level of subsidy will be determined based off the pilot program.
	What happens to the interior bike parking when more vehicle parking is needed?	The Roux Institute at Northeastern anticipates that both bicycle parking and vehicular parking demand will continue to increase as enrollment increases, so it is anticipated the bicycle parking remains in the garage until and if it could be accommodated elsewhere. The Roux Institute at Northeastern University will continue to investigate additional measures to support reduction of vehicular trips to the site including remote parking in connection with

		transit and investment in additional alternative mode infrastructure.
	The current plans show substandard width bike lanes (4').	Sherwood Street will be designed to accommodate a shared use path as requested by the City of Portland.
	Where are the on-site showers and lockers planned to be located? Is there a campus gym?	Per Cannery Building Drawing A-100, there are on-site showers and lockers in the Lower Level of the Cannery Building. There is not a campus gym.
	What is the anticipated cost/month for parking spaces --> market rate?	Users will be charged market rates for parking.
	Confirm transit pass subsidy. Not a transit pass provided via employee/student ID as done by most institutions (USM/SMCC, etc) with no out of pocket outlay required?	The Roux Institute is currently running a pilot program with METRO. Bus passes will be subsidized long term and the level of subsidy will be determined based off the pilot program.
	Where and how will carpool parking be prioritized?	Grade level priority parking spaces will be provided as demand dictates.
	Can electronic screen displaying transit information be provided in the lobbies of the two main Ph 1 buildings for increased visibility of multimodal options?	Informational signage will be provided in both buildings.

	Can 'simple' AC outlets be added in vicinity of interior bike parking in short-term to encourage e-bike/bike usage in general?	Yes.
	Reported survey results said high desirability of bikeshare. Can this be implemented in short-term versus long-term?	Yes. The bike share location is shown on the Figure 5-1 Bike Amenities and Circulation.
Justin Pellerin, P.E. - DPW Sherwood Street and Campus Site Plan Response Comments		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Sherwood Street Roadway Improvement Comments		
1.	New catch basin structures in Sherwood Street should be installed per City of Portland Technical Manual standards. Each basin should have a headstone and be installed with a 3' sump. Include applicable details in the plan set.	Noted. The details will be revised accordingly and provided with revised Civil Drawings to be provided with subsequent submission.
2.	All storm drains and underdrains 10" and greater shall meet the City's stormdrain material specifications listed in section #2 of the technical manual.	Noted.
3.	It appears the proposed 12" underdrain/stormdrain pipe running along the southerly curb line between station 212+00 and 213+00 is in conflict with an existing gas main. Is the applicant working with Until to relocate the gas main in this area?	This Sherwood St design is being revised to alter lane widths and add a shared use path as suggested. Coordination with Unitil will take place during future design if required.

4.	DPW is in the process of inspecting the existing storm drain line in Sherwood Street. Improvements may be needed within the project paving limits of the pipe is found to be in poor condition.	Noted.
Campus Site Plan Comments:		
1.	The existing condition plans and design plans should be updated to address the storm drain alignment issues and to resolve any remaining utility conflicts between the 12" water main and the City's storm drain system in Sherwood Street.	It is our understanding Public Works is completing CCTV evaluation of the storm drain in Sherwood Street. We will update our existing conditions and proposed plans accordingly.
2.	PWD should review the proposed sanitary connection into Ex SMH-1. The City's mapping indicates this structure is owned by PWD; however, that is somewhat unclear.	PWD confirmed the structures are owned by PWD. We are working with PWD on this sewer connection and will provide documentation of approval upon receipt.
5.	The existing condition of the structure (EX-SMH-1) and outlet pipe out of EX-SMH 1 should be thoroughly inspected and possibly replaced if in poor shape. If EX-SMH is found to be in poor condition it appears an alternate alignment could be utilized which would result in the Elimination of EX-SMH-1 and Proposed SMH-1 (And S-1) by connecting S-2 directly to un-named EX SMH.	Noted. We are working with PWD on this sewer connection and will provide documentation of approval upon receipt.

6.	The plans should be updated to depict the locations of all the required ESC Controls including but not limited to dewatering/stockpiling areas with proposed BMPs and the proposed location of the anticipated stone construction entrance.	The Civil Drawings will be updated accordingly, and provided as part of a subsequent submission.
7.	The applicant shall confirm the sizing and design of the proposed external grease trap associated with the LRC building and verify it is designed in accordance with Chapter 7 of the City's sewer use rules and regulations	The applicant will provide updated data on the size and design of external grease trap and verify it complies with Chapter 7 as part of a subsequent submission.
8.	The project will be required to submit a dewatering plan to the Water Resource's Compliance Coordinator in accordance with chapter 8 of the City's sewer use rules and regulations prior to any excavation work and dewatering activities occurring on-site.	Noted. A general note will be added to the Civil Drawings, which will be provided as part of a subsequent submission.
Ann Machado – Zoning Administrator Review Comments		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Section 8.5.7.D		
1. B-5 is the underlying zone	No dimensional requirements under Table 7-E except height which is governed under the IOZ requirements.	Noted.

3. Street Wall Height	Min. 45′ & max. is 105′ -LRC – 68.6 -Garage – 66.2 stair tower (86.7)	This standard is met.
4. Stepback	Needed at street wall if higher than 105′ – 10′ min. – LRC goes from 22.5′ to 13.5′	This standard is met.
5. Building Length	a. no building is longer than 250′ – don't need publicly accessible corridor – figure 3.3 244′	This standard is met.
Building Height – Figure 8-F	The maximum height for the various height zones based on the average grade appears to be met. My only issue is with the Average Grade plans. The sheet (AS61.0 gives the average grade of the garage as 20.8. I calculate it as 18.8′.	Elevations have been calculated at the four corners of the garage and do not include the daycare building. Please refer to figure 8-FA attached to this document for a visual summary.
Shoreland Zone	The highest annual tide has been located but I don't see a 25′ shoreland zone setback located.	The 250′ Shoreland Zone setback will be clarified on the revised Civil Drawings to be provided as part of a subsequent submission.
Floodplain	Both the approximate FEMA flood zone line and the approximate flood zone line based on EL 9 are shown. I'm not sure what they mean by the approximate FEMA flood zone line. Are they overlaying the FIRM from 1986? EL 9 impacts the LRC building and we will need a floodplain permit application for new construction and elevation certificates.	Both the FEMA FIRM flood zone line (from the FIRM) and an approximate flood zone line based on the existing contours and the flood elevation (EL 9) are provided. While the approximate flood zone line (EL 9) intercepts the LRC, the proposed FFE is 22.5, and therefore a floodplain permit application is not required.

	The other questions that I have is about the timing of the new flood zone maps. We still don't know when the new maps will go into effect. Obviously, we are reviewing the current site plan under the current floodplain maps. My question is, if the new maps go into effect before the building permits are applied for, would the buildings then need to meet the base flood elevation for the new maps?	Noted. We anticipate the City will make a determination on timing.

ATTACHMENT 4: SUSTAINABILITY CHARTER COMMENT RESPONSES

Sustainability Charter		
Code mandated items		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Energy, Responsible Materials, and Occupant Experience	To be determined at time of permitting.	We understand these will be reviewed as part of the building permit process.
Energy		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Eliminate on-site fossil fuels in building HVAC and Food service.	Heat pumps are proposed in the LRC building. Additional information will need to be submitted for the Cannery Building and the Structured parking & preschool facility building to confirm that efficient electrical mechanical systems are being utilized.	Fossil fuels will not be utilized for HVAC and food services. Design of mechanical systems will be provided as part of the building permit process.
	Submit a narrative confirming how fossil fuels will not be combusted on the site for any of the uses of the site (e.g., lab, café space).	The project is committed to utilizing all electric kitchens throughout. The design of

		these systems will be provided as part of the building permit process.
	Complies: Hot water is provided through electric heaters, as noted in Sheet P1.01.	No action required.
Provide infrastructure for future PV installation.	PV locations identified for the LRC and Cannery buildings, but is not identified for the Structured parking & preschool facility building. Update the floor plans for the Structured parking & preschool facility building to identify the location of future PV equipment for the building.	Conduits will be provided from roof areas to central electrical rooms to provide infrastructure for potential PV systems in the future. Details of this design will be provided as part of the building permit process.
Design the building to be 30% better than ASHRAE 90.1 2019 and 15% of roof area dedicated for PV.	Geothermal HVAC shown in Sheet GT-01 and photovoltaic systems >15% of the roof area are proposed for the roof of the LRC building. Applicant shall submit a narrative demonstrating how the combined systems will be designed to be 30% better than ASHRAE 90.1-2019.	Thorton Tomasetti ("TT") is performing an energy model for the project. The report will be submitted to the city for review prior to or as part of the building permit application.
Embodied Carbon		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Reuse existing historic building.	Applicant shall provide narrative clarifying how the submitted strategy is being achieved through the proposed renovation of the Cannery Building.	The Bean Building is being designed to support a flexible program. This includes limited use of permanent partitions which supports the strategy indicated.

Advocate for Environmental Product Declarations (EPDs) for all concrete used on the project.	Applicant shall identify when procurement for materials is anticipated to take place and when copies of procurement notices can be sent to City Staff for confirmation relative to the submission & issuance of building permits.	The project teams will require EPDs in specifications. A procurement schedule will be generated and shared with City when available.
Perform a whole building life cycle analysis (LCA) to study carbon conservation measures.	Identify when a LCA will be completed/be able to be submitted for review by City Staff prior to issuance of building permits for the project.	An LCA of each building will be submitted to the city for review prior to or as part of the building permit application.
Reduce the embodied carbon of structural materials in the building by 15% from a typical design.	Complies: Mass timber is proposed for a portion of the building.	No action required.
	Identify when a LCA will be completed/be able to be submitted for review by City Staff prior to issuance of building permits for the project.	An LCA of each building will be submitted to the city for review prior to or as part of the building permit application.
Responsible Materials		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***

Source wood products from Maine forests and/or sustainably managed forests or salvaged/reclaimed wood suppliers.	Applicant shall identify when procurement for materials is anticipated to take place and when copies of procurement notices can be sent to City Staff for confirmation relative to the submission & issuance of building permits.	A procurement schedule will be generated and can be shared with City when available.
Advocate for the removal of PFAS chemicals in other targeted product categories.		
In coordination with the contractor, identify key materials to procure from the state of Maine.		
Divert at least 50% of non-hazardous construction and demolition waste from the landfill.	Prior to a certificate of occupancy, a waste hauler contract for the site shall be submitted to review and confirm that 50% landfill diversion of non-hazardous materials will be ensured.	No action required at this time.
	Reuse of rail lines and bean pots have been proposed as part of interpretive work related to historic preservation. On the project website, under Site Work, a July 28, 2023	Website content from July is not the most current material. Review of project should be contained to the site plan application. If

	post identified historic elements that will be reused and construction materials to be reused/recycled. Update application materials to identify how the construction materials are being reused/recycled.	materials will be reused/recycled, the documents will be updated accordingly. Landscaping design details have not been finalized.
Target Red List free finishes in targeted spaces.	Complies: October 19, 2023 Design Development document states that red list free materials shall be used.	No action required.
Use best practices for bird friendly design.	Bird safe glass treatments are proposed for some of the glass in the LRC building. Confirmation that the entirety of the building glass is bird safe has been requested to meet §8.5.7(F)(6) of the Land Use Code.	The applicant will provide more information as it pertains to bird safe glass in the Cannery Building's new windows as part of a subsequent submission. The applicant will provide a glazing schedule for the Structured Parking and Daycare Building that includes treatment for Bird Safe glass complying with Maine's Legislation LD 670 and conform to the City of Portland's Bird Friendly Ordinance as part of a subsequent submission.
Water		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Reduce indoor water use from	Flow rates for plumbing fixtures have not been provided as part of the submitted application materials. Update application materials to state the proposed flow rate for	Flow rates for plumbing fixtures will be provided as part of the building permit process.

25% from a code baseline building.	plumbing fixtures and the applicable code requirements for flow rate.	
	Urinals are proposed in public bathrooms for the LRC, but are not shown in the Cannery Building or the Structured parking & preschool facility building. Clarify why urinals are not proposed in the Cannery Building and whether any urinals are proposed for the Structured parking & preschool facility building.	Urinal counts will be provided as part of the building permit process.
Maximize the use of native and drought tolerant landscape plants.	Complies: Native and low-maintenance plantings have been prioritized to require fewer short- and long-term maintenance needs.	No action required.
Stormwater Management in accordance with Maine Department of Environmental Protection Best Management Practices Manual and City of Portland Technical Manual.	Complies: Application is designed to meet Chapter 500 standards and has incorporated LID strategies such as protecting natural drainage systems, utilizing low-maintenance landscaping, minimizing impervious surfaces, and providing vegetated open-channel conveyance systems.	No action required.

Prohibit the use of all synthetic pesticides and fertilizers for the operation and maintenance of landscape and agriculture through Integrated pest management (IPM)conducted as part of an overall Plant Health Care Program for the Roux site.	Complies: Native and low-maintenance plantings have been prioritized to require fewer short- and long-term maintenance needs.	No action required.
Occupant Experience & Equity		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Optimize natural daylight and mitigate glare.	Confirmed in General Note 8 on Sheet A12.01 of the architectural plans for the LRC building. Confirmation of shades or curtains for the Cannery Building and the Structured parking & preschool facility building have not been provided. Update architectural drawings to confirm that shades or curtains will be provided for regularly occupied spaces that face east, west, and south for the Cannery Building and the Structured parking & preschool facility building.	Information regarding shades or curtains for the Cannery Building and Daycare facility will be provided as part of the building permit process. Shades are not assumed at structured parking as space is not regularly occupied.

Incorporate biophilic design principles.	Mass timber and stone are proposed to be used for the LRC building. Currently, only non-natural materials are identified for the Structured parking & preschool facility building. Update architectural drawings to identify what natural materials are proposed to be used for the Structured parking & preschool facility building.	The daycare facility will incorporate natural material on the interior. The materials will be indicated during the Planning Board process. The structured parking will incorporate a biophilic design through the expression of waves in the design of the west facade.
	Provide a supplemental narrative and/or sample designs on how the proposed art and signage for the campus will create cultural and ecological connections to place, as well as the locations for the proposed locations for art and signage.	Design of the proposed art/signage will be provided as part of the building permit process.
Use the building to educate building and site users.	Identification of informational signage on sustainability features of the LRC & Cannery buildings is not included in the signage plans. Update the architectural drawings and/or signage plans to identify where the proposed informational signage on sustainability features of each building will be located and the proposed design of the signage.	Design of the proposed signage will be provided as part of the building permit process.
Provide amenities to support public access.	The submitted floor plans for the LRC building include drinking fountains and/or bottle filters. The submitted floor plans for the Cannery Building and the Structured parking & preschool facility buildings do not show drinking fountains and/or bottle filters. Update floor plans for the Cannery Building and the Structured parking & preschool facility building to identify the location(s) of drinking fountains and/or bottle fillers.	Plans for drinking fountains/bottle fillers for Cannery Building will be provided as part of the building permit process. The Parking garage is a transient space so water fountains are not planned. The Daycare facility is not accessible to the public and the water needs of the staff and children are met by traditional sinks.

	Publicly accessible restrooms are provided in the LRC and Cannery buildings. Submitted floor plans for the Structured parking & preschool facility building do not provide enough detail to confirm whether restrooms will be publicly accessible next to the proposed shoreland open space. Update architectural drawings to clarify if and how publicly accessible restrooms will be provided.	For security and safety the Daycare facility is not publicly accessible. No public restrooms are planned for the structured parking.
	Complies. Shared-use facilities are provided throughout the site.	No action required.
	Complies. Benches are provided throughout the site.	No action required.
	Complies. Site wayfinding package is included as part of the application materials.	No action required.
Provide Gender inclusive restrooms.	Public, gender inclusive restrooms are provided in public areas in the LRC building. The split of restroom facilities in the Cannery Building connotes that bathroom facilities will not be gender inclusive. Confirm that the both public area bathrooms on the lower level of the Cannery Building are gender inclusive.	Both public area bathrooms on the lower level of the Cannery Building are gender inclusive.
Provide lactation rooms.	Lactation rooms not identified in the floor plans for the LRC and Cannery buildings. Update floor plans to identify lactation rooms that include a locking door, sink, changing table, comfortable seating, lighting control and electrical outlets.	Updated floor plans will be provided as part of the building permit process.

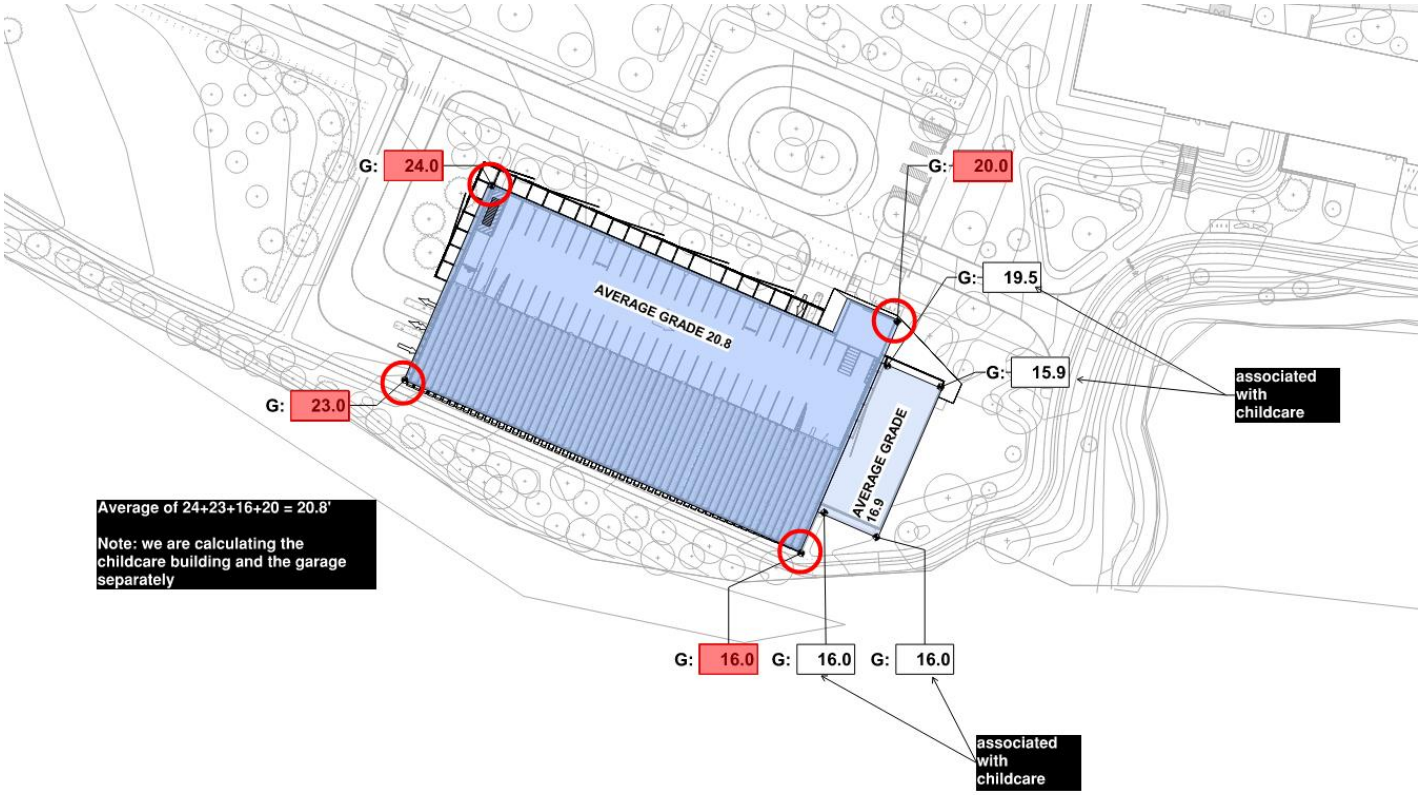
Transportation		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Conduct study of EV charging needs. Provide required EV capacity to meet anticipated demand.	EV Charging Study is still under review by City Staff. As Study is under review, Application should confirm whether the charging should meet the demand in coordination with EV or PV requirements approved by the City.	The EV charging provided is intended to be in compliance with site plan standards.
	EV Charging assessment should be coordinated with the submission of TDM reports. City staff encourage the assessment of EV charging for automobiles and bicycles as part of the campus goals to reduce SOV automobile trips.	No action required at this time.
Integrate quality/ secure bicycle storage into the site design and provide shower facilities.	Bicycle storage is proposed on the lower level of the Cannery Building. Bicycle storage is not provided in the LRC building. Update floor plans for the LRC building to identify interior, secure bicycle storage.	Users of the LRC building will utilize bike storage on site, provided in either the Bean Building and/or in the structured parking.
	Complies: Showers are provided on the lower level of the Cannery Building.	No action required.
	Bikeshare stations are not currently identified in the submitted application materials. Update application materials to identify proposed locations for bikeshare stations for review and further discussion with City staff.	The bike share location is shown on the Figure 5-1 Bike Amenities and Circulation.

	Complies: Exterior bicycle parking is distributed throughout the site for buildings in the first phase and future phases of development. As mentioned three standards above, secure bicycle storage will need to be provided for in the LRC building.	No action required regarding exterior bicycle parking. Sufficient indoor bicycle storage will be provided in Cannery Building or the Parking Structure.
	Complies: Application identifies opportunities to reduce SOV trips through unbundled parking, ongoing collaboration with METRO and MaineDOT, on-site shared-use facilities with anticipated connection points to the rest of the peninsula and off-peninsula, as well as pier improvements to facilitate water taxi service.	No action required.
Resilience		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Incorporate near-term future-projected climate change data (2050s) in design of mechanical, electrical, and	Critical building infrastructure has been identified in the LRC building to be located above 22.5 feet NAVD88. Additional information still needs to be provided to confirm that no critical building infrastructure is located below 22.5 feet NAVD88 for the Structured parking & preschool facility building, particularly in the Preschool Facility portion of the building.	No critical infrastructure will be located below 22.5 feet in the structured parking or daycare facility. That will be confirmed in the building permit process.

plumbing systems and/or components on a regular replacement cycle. Incorporate long-term future-projected climate change data (2100+) in the design of the building and infrastructure, including flood resistant materials below the 2100 sea level rise design flood elevation and elevate critical infrastructure above this elevation.	Heat projections with MEP consultant not included with application materials. Applicant should clarify the anticipated development of the projections and point for City staff to review prior to Certificate of Occupancy.	Required information will be provided prior to Certificate of Occupancy.
Prepare emergency action plan and provide appropriate level of backup power to support life safety.	Unable to confirm whether generator can provide 48 hours of energy for essential operations. Applicant should provide supporting documentation based on the proposed storage capacity or the manufacturer that the proposed nitrogen generator can supply energy for 48 hours to essential operations.	Refer to mechanical drawings for fuel oil tank size and location. LRC generator has been sized for 48 hours of run time.

Incorporate campus-wide emergency preparedness planning to enhance overall resilience of the campus/site community.	Emergency preparedness plan not submitted. Applicant should clarify the anticipated development date of the plan and point for City staff to review prior to Certificate of Occupancy.	An emergency preparedness plan will be submitted prior to Certificate of Occupancy.
	Complies: Generator provided on Level 1 of LRC building.	No action required.

FIGURE 8-FA: AVERAGE GRADE CALCULATION FOR GARAGE AND DAYCARE



March 28, 2024

Zach Powell, Senior Planner
City of Portland
389 Congress Street, 4th Floor
Portland, Maine 04101

Re: Response to City Staff Comments – Roux Institute at Northeastern University
Project ID PL-002724-2023

Dear Zach:

Thank you for coordinating the review of the Major Site Plan and Site Location of Development (SLOD) Application for the Roux Institute at Northeastern University. We provided written responses to city review comments on February 5, 2023 and at that time we also submitted the requested enlarged figures, neighborhood meeting summary, CAG meeting summary, Construction Management Plan (V2) and Parking Garage Floor Plans (V2). The documents included with this response address most of the remaining comments and requested documents.

In addition to revisions based upon the City Comments, the drawings have also been updated to reflect changes resulting from advancement of the design. These changes are summarized below:

- The hardscape at the plaza areas have been reduced slightly to maximize planting areas and support pedestrian scale.
- Concrete walkways in the future development areas have been converted to greenspace.
- One of the subsurface stormwater treatment systems was moved from future development space and is now located below the Round.
- Bollard lighting has been replaced with pole lights.

We have used the same format as the first response to comments provided to the City in February. Similar to the comments received, our responses are provided in tables in the following sections:

- Attachment 1. Site Plan Review Comment Responses
- Attachment 2. Zoning Review Comment Responses
- Attachment 3. Peer Review Comment Responses
- Attachment 4. Sustainability Charter Comment Responses

Within the tables, we have kept the previous responses from February and, where applicable, we have added to the responses using blue text.

To support this latest response, the following new files have been uploaded to ProjectDox:

- Documents

- NU Revised IDP
- NU Site Lighting Waiver Requests Letter
- NU Wastewater Capacity Authorization

- Plans
  - NU Childcare Floor Plan
  - NU Illustrative Site Plan
  - NU LRC Vestibule Rendering

The following items have been reuploaded as new versions on ProjectDox:

- Documents
  - NU Stormwater Management Report Ph1 (V2)
  - NU TDM Plan (V2)
  - NU Waiver Table (V2)
- Plans
  - Figure 3-17 Site Circulation (V2)
  - NU Civil Plans (V2)
  - NU Landscape Plans (V2)
  - NU Parking Garage Elevations (V2)
  - NU Parking Garage Floor Plans (V3)
  - NU Sherwood Street Plans (V2)
  - NU Signage Plans (V2)
  - NU Site Security, Lighting and Photometrics (V2)

If you have any questions or require additional information, please do not hesitate to contact me at (207) 558-3708 or dcameron@woodardcurran.com.

Sincerely,

WOODARD & CURRAN, INC.

Denise Cameron

Denise Cameron, P.E.
Project Manager

cc: Sam Reiche, IDEALS

1. ATTACHMENT 1: SITE PLAN REVIEW COMMENT RESPONSES

For the comment responses provided by the Applicant, responses provided on February 5, 2024 remain in black text. Responses added for the March 28, 2024 response have been added in blue text.

Site Plan Review Standards (Sec. 14.6)		
Transportation Standards (Sec. 14.6.1)		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Impact on Surrounding Street Systems	Continue to update application materials in conjunction with comments and recommended mitigation strategies as part of the TMP review process.	Acknowledged. No action at this time.
Access and Circulation	Update application materials to satisfy comments provided in Attachment 3. Continue to update application materials in conjunction with comments and recommended mitigation strategies as part of the TMP review process.	See Attachment 3 table for response.
Public Transit Access	No updates required.	This standard has been met.
Parking	Submit a parking demand analysis that provides evidence supporting the proposed parking supply. As necessary, update the TDM plan for any changes resulting from the parking demand analysis.	Parking demand is calculated hour-by-hour based on projected arrivals and departures. Because there are no components of this program that would create overnight parking (i.e., residential units or hotel rooms), parking demand is zero at the beginning of each day. As detailed in the TMP, time-of-day patterns for graduate student, affiliated user, special event, and some faculty trips were developed based on scheduling expectations and

		observed patterns at the current Fore Street campus. For these users, parking demand is calculated as the balance of arrivals and departures multiplied by the vehicle mode share. For other uses, standard rates from the Institute of Transportation Engineers Parking Generation Manual were applied. These are provided as a peak parking demand and the percent of peak demand at each hour of the day. Mode shares and internal trip reductions were applied using identical factors as for trips. At opening year, parking demand peaks at 601 spaces. Were auto mode share to remain at the TMP levels (80% for students, 90% for all others), peak demand would increase to 881 at completion of the TMP program. To be conservative, trip generation was calculated this way, however this level of demand exceeds parking supply. For this reason, the TDM plan specifies a program of strategies to reduce vehicle mode share below the levels in the TMP. The university will need to progress towards the mode shares in the TDM plan to keep demand within the site's parking constraints. An updated TDM plan is included with this submission. See Section 4.3 of the TDM for narratives related to Proposed Parking Supply/Demand.
Transportation Demand Management	Update TDM plan to satisfy comments in Attachment 3.	See Attachment 3 table for response. An updated TDM plan is included with this submission. See Attachment 3 for further discussion of the updates to the report.

Environmental Quality Standards (Sec. 14.6.2)		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Preservation of Significant Natural Features	Update the site plan set and survey to identify all significant natural features on and immediately adjacent to the site. Updates should specify the approximate boundaries of habitats of endangered species.	Acknowledged. These updates will be included in a subsequent drawing submission. An updated civil plan set is included with this submission.
Landscape Preservation	Submit a tree survey for the site that meets the standards of §4.3.1. of the Technical Manual.	A survey of existing trees 10" DBH or higher is being prepared and will be provided in a subsequent submission. An Existing Trees plan has been added to the landscaping plans as sheet L1.00 and is included with this submission.
Site Landscaping and Buffers	Update application materials to provide 8-12 street trees within the City right-of-way or through an alternative strategy meeting the standards of §4.6.4. of the Technical Manual. If alternatives are proposed, alternative street tree planting strategies are subject to the review of the City Arborist and may require additional documentation for future preservation/evidence that proposed planting sites are unlikely to be redeveloped in the near future.	The team is working to designate street trees on the plan in accordance with city requirements. We will also provide substitutions for all maple trees, as requested. This plan will be provided in a subsequent submission. The site landscaping is being updated to designate street trees and to replace all maple trees. The Applicant has reached out to the City Arborist and is in the process of setting up a meeting with him to review the proposed plantings. The updated planting sheets in the landscaping plans will be submitted following that meeting.
Water Quality, Stormwater Management and Erosion Control	Update the application to satisfy comments from Wright Pierce.	See Attachment 3 for responses to Wright Pierce comments. Attachment 3 has been updated to further address Wright Pierce's comments.

Public Infrastructure and Community Safety Standards (Sec. 14.6.3)		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Consistency with City Master Plans	No updates required.	This standard has been met.
Public Safety and Fire Prevention	Email the Department of Public Works to begin the E-911 address process, with Zach Powell copied on the email. The applicant team shall work with the Department of Public Works to identify any additional steps that need to be taken before site plan approval.	The applicant will initiate E-911 address process prior to planning board hearing. The Applicant has reached out to Charles Wordell and has started the E-911 process for addressing. The Applicant will be working with the City on designating appropriate street names and addresses.
	Update architectural drawings to demonstrate how the western portion of the perimeter access loop is actively integrated into the overall campus design and how the site design enhances the overall experience of using the perimeter access loop for cyclists and pedestrians.	The architectural/landscape drawings are being updated to widen the perimeter shared path to a minimum of 12 feet. A typical section of the revised perimeter path has been added to the attached Figure 3-17: Site Circulation Plan. The architectural drawings are being updated to add screening to the first two levels of the Structured Parking building to enhance pedestrian and cyclists' experience. These updated architectural and landscape drawings will be provided as part of a subsequent submission. The perimeter path has been revised to a minimum width of 12 feet and updated civil and landscape plans are included with this submission. Screening has been added to the first two levels of the Structured Parking Building and updated Parking Garage Elevations have been provided.
Public Utilities	Submit ability to serve letters from utilities when available and provide any additional	A request for ability to serve letters has been provided to Portland Water District and the Department of Public Works. The Applicant team has also been actively working

	information requested by the Portland Water District, as requested.	with these utilities to review the proposed project design. The ability to serve documentation will be provided upon receipt. We have received the ability to serve confirmation from Public Works for wastewater. A copy is provided as part of this submission. The confirmation of ability to serve from Portland Water District will be provided upon receipt.
Site Design Standards (Sec. 14.6.4)		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Massing, Ventilation and Wind Impact	No updates required.	This standard has been met.
Shadow	No updates required.	This standard has been met.
Snow and Ice Loading	No updates required.	This standard has been met.
View Corridors	No updates required.	This standard has been met.
Historic Resources	Submit an updated copy of the site plan set that shows the limits of the designation boundary.	The plan set will be revised to show the limits of the designation boundary. Revisions are in progress and will be provided as part of a subsequent submission. An updated plan set including the historic designation boundary is included with this submission.
	Update application materials to satisfy Board and Staff comments from the December 6, 2023 Historic Preservation Board Meeting. Await comments from the Historic Preservation Board and Historic Preservation Staff.	Application materials will be updated in response to Staff comments from 12/6/2023 HP Board Meeting and any subsequent comments from HP Board and HP Staff. An updated set of documents is expected to be issued around February 12, 2024 for HP Staff and Board review.

		The Historic Preservation Board is conducting a review of the Bean Building rehabilitation and interpretive elements (reference plan number: HPBR-002723-2023). Workshops with the Historic Preservation Board were held on December 6, 2023 and March 6, 2024. Copies of the submission documentation can be provided, upon request.
Exterior Lighting	Update the application to include two street lights that meet the standards of §10.2 and Figure X-1 of the City's Technical Manual or seek waivers.	The applicant assumes the two streetlights requested are for Sherwood Street. Clarification will be provided as part of a subsequent submission. A waiver is being requested to address the streetlights on Sherwood Street relative to utilizing lights that are more in line with the campus lighting systems. The waiver request form has been updated and included as part of this submission and a letter further describing the waiver requests is also provided. Updated lighting plans with fixture information have also been provided.
	Update application to have site lighting meet the standards of §12.3 of the Technical Manual.	The applicant used Section 12.3 of the Technical Manual as the basis of design. The lighting design and photometric plans are currently under review and updates will be provided as part of a subsequent submission, if required. As noted previously, Section 12.3 was utilized as the basis of design, however waivers have now been requested for three specific standards within that section of the Technical Manual. The waiver request form has been updated and included as part of this submission and a letter further describing the waiver requests is also provided. Updated lighting plans have also been provided.
	Update photometric plans to provide average illumination, uniformity ratio, and maximum illuminance at ground level around the	The lighting set will be updated as requested and will be provided as part of a subsequent submission. Updated lighting plans have also been provided.

	Structured parking & preschool facility building.	
	Confirm the CCT that will be used for each proposed luminaire.	Confirmed. All site lighting will be LED and shall not exceed 3000K Correlated Color Temperature (CCT). The applicant will clarify on drawings as part of a subsequent submission. Updated lighting plans with fixture information have also been provided.
	Add information on luminaire E11 to the Luminaire Schedule table.	The lighting Luminaire Schedule table will be updated to add information on luminaire E11 and will be provided as part of a subsequent submission. Updated lighting plans with fixture information have also been provided.
Noise and Vibration	No updates required.	This standard has been met.
Signage and Wayfinding	No updates required.	This standard has been met.
Design Standards	Please refer to Roux IOZ design comments in the Zoning worksheet.	Design review comment responses are provided in Attachment 2.

2. ATTACHMENT 2: ZONING REVIEW COMMENT RESPONSES

For the comment responses provided by the Applicant, responses provided on February 5, 2024 remain in black text.
Responses added for the March 26, 2024 response have been added in blue text.

Zoning Use Review (Article 6)		
Zoning Performance Standards (Sec. 6.8)		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
§6.8.8(A)	Update architectural drawings to include screening for the first two levels of the Structured parking & preschool facility building.	The architectural drawings are being updated to add screening to the first two levels of the Structured Parking building and will be provided as part of a subsequent submission. Updated Parking Garage Elevations are included with this submission.
Zoning Dimensional Review (Article 7)		
Dimensional Standards (Table 7-A – Table 7-H)		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Structure height	No updates required.	This standard has been met.
Supplemental Dimensional Standards (Sec. 7.4)		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
7.4.3(B)(2)(c)	No updates required.	This standard has been met.

Roux IOZ Standards (§8.5.7)		
Applicability Standards (§8.5.7(A))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Applicability	Revise application materials to satisfy requested updates identified in Attachment 3.	See Attachment 3 table for response. Attachment 3 has been further revised to address these comments.
Phasing and Monitoring (§8.5.7(B))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Monitoring and Amendments	Submit an updated copy of the IDP incorporating the proposed changes identified in Attachment 5.	The IDP will be updated as requested and will be provided as part of a subsequent submission Revised pages 6, 14, 15, and 17 of the IDP are included with this submission to address proposed changes from Attachment 5. Following final review, a complete revised copy of the IDP can be provided.
Public Space	No updates required.	This standard has been met.
Minor & Major Amendments	No updates required.	This standard has been met.
Uses (§8.5.7(C))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Overview of Uses	No updates required.	This standard has been met.

Community Engagement and Connectivity	Submit a narrative and/or figures that demonstrate how the Sherwood Street connection will achieve connectivity and community engagement with the surrounding neighborhood.	The applicant has proposed to reconstruct Sherwood Street between Veranda St and the site driveway. The work will include a shared use path along the north side of Sherwood Street and a sidewalk along the south side of Sherwood Street, providing direct connections to the neighborhood and the signed bike route on Veranda Street. The applicant is invested in maximizing nonmotorized connectivity, and the site is ready for future connections as they become available. The landscape drawings are being updated to widen the perimeter shared path to a minimum of 12 feet. A typical section of the revised perimeter path has been added to the attached Figure 3-17: Site Circulation Plan. Lighting, pavement markings, and wayfinding will be provided to support community connectivity. Revised drawings are provided to reflect the current design of the shared use path for Sherwood Street and the site. An updated signage plan has been provided to support wayfinding.
Ground-floor Uses	No updates required.	This standard has been met.
Hotel Use Standards	No updates required.	This standard has been met.
Dimensional Requirements (§8.5.7(D))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Applicability	Update the application to comply with zoning performance standards and IOZ dimensional requirements.	See responses below.

Minimum and Maximum Street wall heights	No updates required.	This standard has been met.
Stepbacks	No updates required.	This standard has been met.
Building Length	No updates required.	This standard has been met.
Transitions and buffers	Update architectural drawings to include screening of all structured parking levels on the western façade.	The architectural drawings are being updated to add screening to the first two levels of the Structured Parking building and will be provided as part of a subsequent submission. Updated Parking Garage Elevations are included with this submission.
Transportation (§8.5.7(E))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Transportation Demand Management	Update the TDM plan to establish a framework for all envisioned phases of development, including a data collection plan. Staff encourages establishing a plan differentiating parking passes by types of garage users (e.g., Staff vs. student; resident vs. hotel guest vs. off-site visitor), as well as installing permanent bicycle & pedestrian counters at planned & potential shared-use entrances to the site.	The TDM has been developed to establish TDM measures appropriate for each of the user types at the site rather than by building. This sets the framework for incorporating the anticipated TDM approaches for future phases. Measures have been developed to encourage the use of the full spectrum of alternative modes and are scalable to continue to be expanded as the site and other opportunities are developed. An updated TDM plan is included with this submission; see section 2.8 Future TDM Framework.

Traffic Movement Permit	Update application to provide materials requested in Attachment 3 and continue to coordinate with MaineDOT & City staff for future comments & requested revisions.	See Attachment 3 table for response.
Bicycle and pedestrian access and safety	Submit an updated Transportation, Access, and Circulation Plan as a separate document to include pedestrian facilities, as well as contemplated connection points to the rail trail and Tukey's Bridge. Contemplate connections can be differentiated with a dashed line and for Tukey's Bridge, do not need to provide a finalized alignment.	See Attached Figure 3-17: Site Circulation Plan. Figure 3-17 has been further revised and is included with this submission.
	Update application materials to address comments from Bruce Hyman regarding the proposed design of Sherwood Street.	See Attachment 3 table for response.
	Update floor plans for the Structured parking & preschool facility building to provide additional detail on interior connections between building uses, and ingress/egress points for pedestrians.	The Structured Parking and Daycare facility are separated and are not connected. The site plan drawing is being updated to further illustrate ingress/egress access for pedestrians and will be provided as part of a subsequent submission. The Structured Parking and Daycare facility are separated and are not connected. An Illustrative Site Plan drawing has been created to further illustrate ingress/egress access for pedestrians and is being provided as part of this submission.

	Update the application to include a minimum perimeter access loop width of 20 feet and a minimum 12-foot width for all other pedestrian facilities.	The design team has reviewed the width of pathways and is currently revising the plans to widen sections of the perimeter path to a consistent 12 feet. A cross section of the perimeter path has been added to Figure 3-17: Site Circulation Plan, illustrating approach for pavement markings to accommodate shared use. This revised width meets or exceeds other existing trail networks within the City of Portland and will be suitable for the anticipated bike/ped volume. Increasing all pedestrian facilities to 12 feet and perimeter path to 20 feet is not warranted given anticipated use levels. The suggested widening would result in an additional 0.7 acres of impervious surface. Where possible, we are seeking to reduce impervious area to improve quality of our water resources. An updated Civil plan set is included with this submission. Figure 3-17 has been further revised and is included with this submission.
Parking	Updated application materials to include a parking ratio based on the parking analysis.	Excluding the parking structure, total planned building area is 303,600 square feet. This equates to a peak parking demand of 2.9 spaces per thousand square feet. For comparison, the standard Institute of Transportation Engineers rate for a general office building is 2.39 spaces per thousand square feet. While the site includes a large office component, classrooms are a more person-intensive use of space. The academic uses drive parking demand somewhat higher than a pure office development on this site.
	Identify where the estimated parking demand of 881 spaces for 2032 is in the TMP application.	This is discussed beginning on page 9 of Chapter 6 of the TMP Application. An updated TDM plan is included with this submission; see section 4.3 Proposed Parking Supply/Demand.

Circulation	Update the application to include at least a 20-foot wide shared-use path for the entirety of the perimeter access loop.	See above comment response *§8.5.7(E) Transportation: Bicycle and pedestrian access and safe*
Environment (§8.5.7(F))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Open Space	Submit a site plan sheet that shows the proposed public open space with the total amount of open space (in acreage).	This information has been added to the attached Figure 3-18 Areas of Public Open Space Plan
	Submit a draft public access easement for the perimeter access loop and buffer around the loop for review by the Planning Board and Corporation Counsel.	We will provide a draft public easement to Corporation Counsel, under separate cover. Figure 3-18 Areas of Public Open Space has been revised to extend the public access easement along the full length of the perimeter loop.
Sustainability and Resilience Charter	Update application materials to respond to the comments in Attachment 4.	See Attachment 4 table for response.
Lighting	Submit interior lighting plans, sequence of operations, and control details for the Cannery Building and the Structured parking & preschool facility building will be required to confirm compliance with ANSI/ASHRAE/IES Standard 90.1-2022.	The Structured Parking lighting set demonstrates compliance with ANSI/ASHRAE/IES Standard 90.1-2022 and will be provided as part of a subsequent submission. The Bean Building and Daycare facility are currently Shell+Core only. Compliant lighting plans will be provided in future building permit submissions once the 'fit out' designs of the Bean Building and Daycare facility are completed. "

		A general note has been added to the Structured Parking Floor Plans stating "Interior Building Lighting shall comply with ANSI/ASHRAE/IES Standard 90.1-2022."
Design Flood Elevation (DFE)	Submit the FFE for the preschool facility.	The FFE elevation of the daycare is 16. This FFE elevation will be added to the plans of the Daycare Center and will be provided as part of a subsequent submission. The FFE elevation has been added to the plans of the Daycare Center and is being provided as part of this submission.
Shoreline Stabilization & Natural Resource Impacts	No updates requested.	No action required at this time.
Bird-Safe Design	Update architectural drawings for the Learning and Research Center to clarify how the proposed laminated glass fins identified as GL-C1 will include a bird-safe treatment/design with American Bird Conservancy and Cornell Ornithology Lab standards.	The glass fins noted as type GL-C1 are Interior Structural Fins that are perpendicular fins supporting the facade. Accordingly, they pose no risk for bird collision.
	Submit updated detail drawings for the proposed new windows in the Cannery building to demonstrate that the windows or additional treatment to the windows will provide a bird-safe design with American Bird Conservancy and Cornell Ornithology Lab standards.	The applicant will provide more information as it pertains to bird safe glass in the Bean Building's new windows as part of a subsequent submission. The Roux campus buildings will follow the City of Portland's Bird Friendly Ordinance LD-670. Per the ordinance, all new buildings on campus will comply by providing facades that have been treated to have a Maximum Threat Factor of 30 (TF 30) up to 75 feet above grade. A maximum of TF 30 will be achieved through a combination of ceramic fritted glass, angled glass facades and a variety of articulated materials such as metal fins and granite window systems.

		Final spec and design of glass will be provided as part of the building permit submission.
	Submit detail drawings for the proposed windows for the Structured parking & preschool facility building that demonstrate a bird-safe design with American Bird Conservancy and Cornell Ornithology Lab standards.	The applicant will provide a glazing schedule for the Structured Parking and Daycare Building that includes treatment for Bird Safe glass complying with Maine's Legislation LD 670 and conform to the City of Portland's Bird Friendly Ordinance as part of a subsequent submission. The Roux campus buildings will follow the City of Portland's Bird Friendly Ordinance LD-670. Per the ordinance, all new buildings on campus will comply by providing facades that have been treated to have a Maximum Threat Factor of 30 (TF 30) up to 75 feet above grade. A maximum of TF 30 will be achieved through a combination of ceramic fritted glass, angled glass facades and a variety of articulated materials such as metal fins and granite window systems. Final spec and design of glass will be provided as part of the building permit submission.
Mitigation Measures (§8.5.7(G))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Off-Site Infrastructure	No updates requested.	No action required at this time.
Natural Resources	No updates requested.	No action required at this time.

Design (§8.5.7(H))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Waterfront	Submit a detailed elevation for Vestibule 3 for further Staff review.	The applicant is developing an updated elevation rendering that illustrates the details of Vestibule 3 as part of a subsequent submission. A rendering of the LRC Vestibule is included as part of this submission.
Cohesive Campus	No updates required.	This standard has been met.
Historic preservation	Submit clarification on the intended function/s of the radius paved surface leading to the western façade of the Cannery Building, including, but not limited to, any ancillary, delivery, or utility functions.	Paved surface leading to the western facade of the Bean Building to be used for deliveries, trash/recycling pickup, and service access. In addition, this location will be used for bicycle access to a covered, indoor bike parking room. A required egress from the Bean Building will also exit onto this paved surface. See orange triangle graphics on "Figure 5-3 – Bean Building Service Access" designating these locations.
Connectivity	Submit a written description of uses along the coastal path in relation to motorized vehicles.	The coastal path around the Roux Campus is not intended for public vehicles other than emergency vehicles such as Ambulance and Fire Apparatus, and periodic service vehicles needing to access the Bean Building and pier. The coastal path is widened in these areas to accommodate emergency vehicles by incorporating a coble stone shoulder, as reflected in Figure 3-17.
	Submit a narrative discussing the need for multiple garage entrances.	The Garage entrances have been designed with consideration of vehicular flow and safety. The primary entrance will be the North entrance while the East entrance will be used primarily as an accessory entrance during peak hours.

Open space	Update the landscape plan to include native coastal shrubs and grasses along the waterfront edge.	An annotated list confirming native status of all plants within the coastal waterfront edge will be provided as part of our subsequent submission. The site landscaping is being updated to include the native status of proposed plants. The Applicant has reached out to the City Arborist and is in the process of setting up a meeting with him to review the proposed plantings. The updated planting sheets in the landscaping plans will be submitted following that meeting.
Sustainable practice	Confirm whether photovoltaic panels will be installed as part of Phase 1 for the Structured parking & preschool facility building.	Photovoltaic panels will not be installed as part of Phase 1 for the Structured Parking. However, infrastructure will be provided for possible installation in the future.
Resilience	Confirm whether a generator(s) will be included for the Structured parking & preschool facility building. If not, submit a narrative on how emergency power generation & elevator egress will be supplied.	The Elevator must be provided with standby power and comply with the emergency operation and signaling device requirements of the MUBC and NFPA 101. Emergency loads such as lighting and fire alarm will be provided by battery backup through either local battery units or central lighting inverter.
Building design	Submit architectural floor plans and proposed FFE for the preschool facility.	The FFE of the daycare will be 16. This FFE elevation will be added to the plans of the Daycare Center and updated architectural floor plans will be provided as part of a subsequent submission. The FFE elevation has been added to the plans of the Daycare Center and the updated plans are provided as part of this submission.
Building entrances	Update architectural drawings to include additional entrance articulation that supports wayfinding to publicly accessible entrances.	The applicant is developing updated architectural drawings and renderings that illustrate the details of publicly accessible entrances as part of a subsequent submission. The applicant is submitting herein an illustrative rendering of the design approach to the vestibule/entry design for the LRC. The concept includes a recessed entry zone in the glass facade that

		reveals a "canopy" with entry designation. Lighting will be incorporated in the canopy ceiling and differentiated paving will also define the entrance.
Mitigation of impacts	No updates requested.	No action required at this time.
Neighborhood integration (§8.5.7(l))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Neighborhood engagement	Submit the October 30th Community Advisory Group meeting minutes, including a complete list of Advisory Group members (present and not present) and a summary of discussion topics.	The following is submitted in response to comments and to demonstrate fulfillment of the commitment in the Institutional Development Plan to create and work collaboratively with a Community Advisory Group broadly reflective of interested constituencies in the City of Portland: <u>Community Advisory Group Members as of 10.30.2023</u> Tiffanie Bentley, Interim President, SMCC Sarah Boltz, Teacher, Presumpscot Elementary School Emma Bond, Portland Bike/Ped Advocacy Committee Charlie Collins, Friends of Payson Park Eamonn Dundon, Dir. of Advocacy, Portland Regional Chamber of Commerce Jason Judd, Executive Director, Educate Maine Cherie Juniwiecz, East Deering resident Cheryl Leeman, East Deering Neighborhood Association Adilah Mohammed, The Third Place Sarah Nadeau, Parent, Presumpscot Elementary School Bill Needelman, Waterfront Coordinator, City of Portland Jack Phillips, Executive Director, Portland Parks Conservancy Angie Taylor, Principal, Presumpscot Elementary School Aaron Townsend, Dep. Superintendent, Portland Public Schools Mike Tremblay, Director of Transit Development, Metro Steve Von

		Vogt, East Deering Neighborhood for Responsible Development
		Marie Caspard, The Island Institute
		
		<u>Positions yet to be filled but still in active recruitment:</u>
		Front Street Neighborhood representative
		Portland Housing Authority's Washington Gardens
		Portland Housing Authority's Front Street Development
		Rail representative
		
		The first meeting of Community Advisory Group was held on October 30, 2023 and a copy of the meeting notes are attached for your reference. Discussion topics of the first meeting included:
		
		- Overview of Roux Institute
		- Campus development plan and project status
		  o Phase 1 plans, site layout, buildings, landscaping, public access
		  o Institutional Overlay Zone and upcoming permitting process
		- Questions and discussion
		- Role of CAG
		- Draft Charter

	Provide confirmation of who is serving as the designated community contact. City Staff recommends that the community contact be identified on the project website along with the contact email provided at the bottom of each page.	Sam Reiche will continue to serve as the designated community contact, until that responsibility is transferred to the Roux Institute at Northeastern University on or around the time of campus opening. Responsiveness to community questions and input is encouraged through multiple channels on the www.rouxcampusportland.org website, including links to Subscribe to Updates, Leave Feedback and to Reach Out with questions or requests for a one-on-one meeting at info@rouxcampusportland.org. Requests are responded to promptly. This is standard and preferable to including a name and cell phone or email address for a specific individual and will facilitate a smooth transfer of responsibilities to Roux Institute at Northeastern University staff. The Reach Out link or Feedback link is on every page of the website. The website has received 10,159

		unique visitors and has 320 followers who receive regular updates including notices of meetings, minutes, recordings and presentations.
	In keeping with the goal of the IDP to provide up-to-date information through the project website, review and update accordingly the timeline listed under the Info page of the project website.	The timeline is updated regularly to reflect current understanding of the project schedule. Accordingly, the anticipated date for campus opening is being changed to Fall, 2027.
Construction management	Submit a draft design for a dedicated construction webpage that includes communication methods through social media, texting, and hotline.	Northeastern University plans to establish a construction webpage similar to the one created for their recently completed research center, EXP (seen at this link: https://facilities.northeastern.edu/exp/[facilities.northeastern.edu]). As with the current Roux Campus website, www.rouxcampusportland.org, timely information on construction progress will be provided in the form of news and photos. Neighbors and the public can sign-up to receive regular email updates about construction status and other elements that could impact the neighborhood. Further details for the webpage and construction communication plans will be developed in collaboration with prime contractors and shared in advance of construction.
	A detailed construction schedule is referenced but is not attached to the Construction Management Plan. Submit a detailed construction schedule for City Staff review.	The attached Construction Management Plan has been updated accordingly.

	Submit a truck routing plan that identifies routes to and from the site, along with anticipated hours for deliveries. Temporary off-site storage locations should be identified as part of the truck routing plan.	The attached Construction Management Plan has been updated accordingly.
	Under Erosion Control and Preservation of Trees, clarify that temporary ESC measures shall be removed post-construction.	The attached Construction Management Plan has been updated accordingly.
	A wheel wash is included for the eastern construction entrance, but there is not a wheel wash for the southern entrance/ there is no connection for trucks to enter through the southern entrance and exit through the eastern entrance. Clarify what ESC controls are proposed for the southern entrance and if vehicular connections are proposed between the southern and eastern entrances.	The attached Construction Management Plan has been updated accordingly.
	On the Sitework/Foundation sheet of the Site Logistics Plan, the Codfish Building and Pier are identified to be demolished at a later date. However, the demolition of these elements is included in the site plan set. Clarify.	The attached Construction Management Plan has been updated accordingly.

Historic Preservation (§8.5.7(J))		
Standard	***Updates Requested by City Staff***	***Comment Response Provided by Applicant***
Historic preservation review	No updates requested.	No action required at this time.
Required interpretive elements	No updates requested.	No action required at this time.

3. ATTACHMENT 3: PEER REVIEW COMMENT RESPONSES

For the comment responses provided by the Applicant, responses provided on February 5, 2024 remain in black text.
Responses added for the March 26, 2024 response have been added in blue text.

Peer Review Comments		
Wright-Pierce Chapter 500 Review Comments		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Urban Impaired Stream Standard	As noted by the applicant, the proposed development is not located within an urban impaired stream watershed. Therefore, this standard is not applicable.	Noted.
Basic Standard	On Sheet C-002 of the Civil Plans, it appears the perimeter barrier falls within the edge of water called out on the plans. It is recommended to relocate the perimeter barrier to keep it out of the water.	The perimeter barrier will be revised as requested. The updated Civil Drawings will be provided as part of a subsequent submission. An updated civil drawing set is included as part of this submission.
	On Sheet C-002 Inset B of the Civil Plans, it appears the perimeter barrier crosses an existing building. Please confirm and revise as necessary.	The perimeter barrier will be revised as requested. The updated Civil Drawings will be provided as part of a subsequent submission. An updated civil drawing set is included as part of this submission.
Basic Standard	Please confirm whether de-watering is anticipated on the project. If de-watering is anticipated, please consider including a detail for de-watering treatment in the plans and discussion on proper discharge in the Stormwater Management Plan.	Dewatering is anticipated during construction. A detail will be added to the civil plans, to be submitted at a later date. An updated civil drawing set is included as part of this submission.

	In Appendix B of Maine DEP Chapter 500 it is noted that during post-construction ditches and swales should be inspected after heavy rains in addition to the spring and late fall. We would recommend including this additional inspection requirement in the Stormwater Inspection & Maintenance Plan.	The Stormwater Inspection and Maintenance Manual will be updated accordingly and provided as part of a future submission. The Stormwater Inspection and Maintenance requirements have been updated and this is part of the updated Stormwater Management Report included with this submission.
	We recommend the applicant updates winter construction dates on the Civil Plans Sheet D-401 to match Maine DEP requirements.	Sheet D-401 will be updated accordingly and provided as part of a future submission. An updated civil drawing set is included as part of this submission.
	If winter construction is anticipated, we would recommend including Winter Construction requirements outlined in Maine DEP Chapter 500 in the Stormwater Management Plan.	As noted on Sheet D-401, the contractor will be required to comply with the Maine DEP Erosion Control BMP Manual, which includes Winter Construction requirements. In our opinion, this satisfies the Maine DEP requirements.
General Standard	The applicant has demonstrated that they meet the treatment requirements for redevelopment project under the General Standards of Maine DEP Chapter 500.	Noted.
General Standard	We recommend the applicant confirm that proposed pre-treatment meets the requirement of proprietary systems under Appendix B of the Maine DEP BMP manual.	Sediment pretreatment rows designed by the manufacturer are provided for the proposed R-Tank systems in accordance with Chapter 500 requirements. A letter that demonstrates manufacturer review and approval of the design can be provided upon request. A letter from the manufacturer confirming system design review is part of the Stormwater Management Report included in this submission.

Flooding Standard	The applicant states in the Stormwater Management Plan that the portion of the project which discharges to Casco Bay is eligible for a waiver under Maine DEP Chapter 500 Section 4.F(3) since it is discharging to a tidal waterbody. The drainage within Sherwood Street will not drain to Casco Bay; however, the applicant is requesting a waiver from the Flooding Standard for the campus development.	A waiver from the flooding standard is requested for the site development on private property, which drains in its entirety to Casco Bay. The project also requires upgrades to Sherwood Street, including the stormwater infrastructure in Sherwood Street. We are working with Public Works staff on the appropriate public stormwater infrastructure design in Sherwood Street. The Applicant has discussed the waiver for the flooding standard for the campus with Justin Pellerin from the City of Portland who has indicated he is in favor of granting this waiver. None of the site outside of the Right of Way is draining to the Sherwood Street system. The City is in the process of investigating the existing infrastructure, and we will be working with them on the appropriate design to accommodate the Sherwood Street Right of Way drainage.
Wright Pierce - General Comments		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
a.	Section 25 of the Site Location of Development Application states that "public notice requirements associated with Maine DEP Site Law do not apply "because the "City of Portland has Delegated Review Authority." Please confirm public notices will not be required for this application.	We understand that the public notice for SLOD is submitted concurrently with public notice for Site Plan by City Staff; therefore, a separate notice sent by the Applicant is not required.
b.	In Chapter 7.2 Bioretention Filters of Volume III. BMP Technical Design Manual, it is stated that the "geotextile fabric should be Mirafi 170N or equivalent." On Sheet D-	We will review geotextile materials and revise as needed.

	407 of the Civil Plans, the filter fabric is called out as 140N. We recommend the applicant confirm that 140N is acceptable for this application.	An updated civil drawing set is included as part of this submission.
Wright Pierce - Stormwater Management Plan Comments		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
a.	It is stated in Section 3 of the Stormwater Management Plan that stormwater infrastructure on Sherwood Street is still being resolved. Please provide updated stormwater plans for Sherwood Street once completed.	We are working with Public Works staff on the stormwater infrastructure design in Sherwood Street; updated plans will be provided once completed. We are working with City staff to gather existing conditions information for Sherwood Street to confirm design for that portion of the project and will provide further information as it is available.
b.	We would recommend the applicant provide stormwater modeling results to confirm bioretention ponds and R-Tank systems meet the requirements of Maine DEP Stormwater BMP Manual.	Based on conversations with Public Works staff in September 2023 prior to Site Plan submission, we understand that stormwater modeling documentation is not required due to the waiver of the Flooding Standard.
c.	In Section 32-38 City of Portland's Code of Ordinance, it is noted the City requires an annual inspection report completed by qualified post-construction stormwater inspector to be submitted to the Department of Public Works. It is recommended to include this requirement in the Stormwater Inspection & Maintenance Plan.	The Stormwater Inspection and Maintenance Plan will be updated accordingly and provided as part of a subsequent submission. The Stormwater Inspection and Maintenance requirements have been updated and are included in the revised Stormwater Management Report as part of this submission.

Wright Pierce – Plan Comments		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
a.	On the Sand Filter details on sheet D-405, there is a callout for "underdrain to outlet structure (size, location, and length to be determined by Engineer of Record)." On Sheet C-302 the underdrains for the sand filters are shown discharging to daylight and not to a structure. Please confirm intent of detail and revise as appropriate.	The underdrains for all proposed Subsurface Sand Filters will discharge into outlet control structures. Underdrain connections will be clarified in revised Civil Drawings to be provided as part of a subsequent submission. An updated civil drawing set is included as part of this submission.
b.	On sheet C-304, one of the structure tables is cut off and appears to be missing OCS-9. Please provide and updated table showing all OCS information.	The structure table will be updated accordingly. The updated table will be provided with revised Civil Drawings provided as part of a subsequent submission. An updated civil drawing set is included as part of this submission.
c.	Information on SD103 should be provided on Sheet C-304 in the pipe table.	The pipe table will be updated accordingly. The updated table will be provided with revised Civil Drawings provided as part of a subsequent submission. An updated civil drawing set is included as part of this submission.
d.	It appears Subsurface Sand Filter 4 collects drainage from the road through CB14. Please verify if a hydrodynamic separator is required for Subsurface Sand Filter 4.	CB14 is located along a gated access way that will only be used occasionally for service and emergency access; therefore, it is our opinion that the drainage area to CB14 does not meet the

		criteria that would require a separate pretreatment structure.
e.	We would recommend adding a detail for pipe insulation of shallow pipes.	This detail will be added to the revised Civil Drawings, which will be provided as part of a subsequent submission. An updated civil drawing set is included as part of this submission.
f.	We would recommend adding a detail that shows horizontal and vertical utility separation requirements.	This detail will be added to the revised Civil Drawings, which will be provided as part of a subsequent submission. Utility locations and inverts are shown on the plans. Considering the layout that is proposed for utilities on the site a detail with standard dimensions would not be warranted.
g.	On sheet L4.00, consider outlining bioretention cell location as it relates to the proposed vegetation. Confirm native shrubs and perennials are located within the bioretention area, per Maine DEP – Chapter 7.2 – Bioretention Filters.	The bioretention cells will be outlined on Sheet L4.00 and included in a subsequent submission. As noted previously, the Applicant's landscape architect will be meeting with the City Arborist to review proposed plantings, and the planting plans, including sheet L4.00 will be submitted following that meeting.
Tom Errico, P.E. – NE Traffic Eng. Director Review Comments		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
1.	The applicant shall provide the parking demand analysis back up information in support of the project's parking supply.	With the reduction in the size of the garage, the resulting parking supply (641) is in alignment with the projected demand (581) at project occupancy.

		Since the previous submission, the parking count has been reduced, but still remains above the projected demand at occupancy. There are now 610 spaces in the garage and 14 on the site, for a total of 624.
2.	The applicant shall provide sight distance measurements at the Veranda Street/Sherwood Street intersection.	Sight distance looking north from Sherwood Street exceeds the minimum 250 feet (Maine DOT standard at 30 mph). However, when exiting Sherwood Street, the sight distance looking left (south) is blocked by the on-street parking and is only visible to 230 feet. As in most urban areas, in actuality, vehicles pull up further than 10 feet behind the edge of pavement. If existing vehicles pull up to edge of roadway, beyond the impact of the parked vehicles on the south side of Veranda Street, sight lines increase dramatically.
3.	The alignment/configuration of the internal three-way STOP intersection is a concern given the heaviest egress traffic movement will have to make a hard left maneuver. I would be interested in the evaluation of a small roundabout at this location.	A small roundabout will create right of way impacts and there are concerns with buses traversing over a domed truck apron.
4.	I support a waiver for the size of parking spaces in the garage given low vehicle turnover.	Noted.
Janine Ba – DPW Transportation Development Review Comments		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
1.	DPW agrees with the proposed cross sections provided by the Transportation Program Manager for Sherwood Street that includes a 10' shared use path and feel it	The Sherwood St design will be updated to include a 10' shared use path.

	should be continued onto the campus and transition at the intersection.	The Sherwood St design has been updated to include a 10' shared use path. Revised Sherwood Street Plans are included as part of this submission.
2.	The applicant shall label the roadway (Sherwood Street) ROW and centerline on the plan view and cross section sheets.	Labels will be added to the Civil Drawings to be provided as part of a subsequent submission. ROW and centerline have been labeled as suggested. Revised Sherwood Street Plans are included as part of this submission.
3.	When printed it can be hard to distinguish between existing and proposed elevation. All elevations in the plan set need to be labeled as existing or proposed to prevent confusion. Update the plan set by using EX. Or parentheses () to distinguish between the type of elevation.	Plans will be updated as requested. Contours have been added to the plans and elevations have been labeled as suggested. Revised Sherwood Street Plans are included as part of this submission.
4.	DPW feels a traffic circle would work better at the intersection pictured on page 2/2 of email from Janine Ba dated 12/20/23.	A small roundabout will create right of way impacts and there are concerns with buses traversing over a domed truck apron.
5.	DPW has concerns with the minimum 5ft sidewalk width proposed for the site. The sidewalk width should be sized to meet pedestrian demand for the campus.	The Sherwood St design will be updated to include a 10' shared use path on the north side of the street. The Sherwood St design has been updated to include a 10' shared use path on the north side of the street. Revised Sherwood Street Plans are included as part of this submission.

6.	Revise the plans to adjust the -LW- within the property or provide documentation that shows the applicant has permission to be on the property.	At this time, the proposed work will occur entirely within the Applicant's property and City Right-of-Way. The limits of work will be adjusted accordingly on Civil Drawings provided as part of a subsequent submission. Plans have been revised to accommodate the 10' shared use path and 5' sidewalk while keeping all public infrastructure within the Right of Way. Some temporary agreements may be needed for grading and driveway improvements. Revised Sherwood Street Plans are included as part of this submission.
Mark Reiland – City Arborist Review Comments		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
1.	Please include location, species, and DBH of existing trees on site and indicate tree protection measures for existing trees to be preserved. Groups of trees or wooded areas to be preserved can be indicated by showing the location of the collective group canopy dripline.	A survey of existing trees of 10" DBH or higher is being prepared and will be provided in a subsequent submission. The existing trees will not remain, as they will be impacted by the proposed grading and site improvements. An Existing Trees plan has been added to the landscaping plans as sheet L1.00 and is included with this submission.
2.	Please choose alternative species for the proposed maple selections; Silver Maple, Red Maple, Sugar Maple and Freeman Maple. The urban forest in the greater Portland area is over saturated with maple (>30% by count) creating a high degree of susceptibility to Asian Longhorned Beetle infestation.	Subsequent submissions of the landscape plans will include substitutions for all maples. The site landscaping is being updated to designate street trees and to replace all maple trees. The Applicant has reached out to the City Arborist and is in the process of setting up a

		meeting with him to review the proposed plantings. The updated planting sheets in the landscaping plans will be submitted following that meeting.
Transportation Demand Management Plan Preliminary Comments Markup (dated 12/5/2023)		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Section 1.1.2	Will the full capacity of the parking garage be available during Phase 1? Will parking costs be market rate? If so, for whom? This is key to understanding incentives/ disincentives to driving.	With the reduction in the size of the garage, the resulting parking supply (641) is in alignment with the projected demand (581) at project occupancy. Since the previous submission, the parking count has been reduced, but still remains above the projected demand at occupancy. There are now 610 spaces in the garage and 14 on the site, for a total of 624.
Figure 2 Campus Transportation Access	The M-UP substandard width of 6' for the beginning. Substandard bike lanes proposed on Veranda Street, not a M-UP.	Sherwood Street will be designed to accommodate a shared use path as requested by the City of Portland. Revised Sherwood Street Plans are included as part of this submission.
2.2.1 Existing Conditions	Confirm Sherwood Street right-of-way width.	ROW is 3 rod or 49.5 feet.
2.2.3 Potential Future MaineDOT Infrastructure	Discuss Berlin/SLA pathway and Veranda St bike lanes. Confirm shared-use path width.	The Veranda Street bike lanes are mentioned in 2.3.4 which discusses other potential future infrastructure as it is not a MaineDOT project.

2.3.1 Existing Conditions	Add alternative biking route around Baxter Boulevard via Back Cove Trail to narrative.	Agree, bicyclists can also use the Back Cove Trail or Baxter Blvd as a less direct route into the Portland Peninsula.
Figure 3. 15 Minute Bike Shed Zone	Quite skeptical this is the 15 min. bike shed & barely even drive shed. Confirm bike shed boundaries.	Bike shed boundaries will be updated/confirmed. Updates to this figure can be provided as part of a subsequent submission, as necessary. Bike shed boundaries have been revised and a revised TDM Plan including this figure is included as part of this submission.
2.4.2.2 Other Metro Opportunities	Confirm at what level transit passes will be subsidized for students, staff and faculty.	The Roux Institute is currently running a pilot program with METRO. Bus passes will be subsidized long term and the level of subsidy will be determined based off the pilot program.
2.7 Existing TDM Efforts	Confirm at what level transit passes will be subsidized for students, staff and faculty.	The Roux Institute is currently running a pilot program with METRO. Bus passes will be subsidized long term and the level of subsidy will be determined based off the pilot program.
	Confirm the rate students will be charged per parking space.	Users will be charged market rates for parking.
Table 2 Transportation Survey Mode Split Data	What was response rate to the Surveys? Is there a meaningful breakdown by students vs staff/faculty/others since mode share targets are different for each?	The surveys include a demographic breakdown between students, faculty, staff, others, ect.
4.3 Proposed Parking Supply/Demand	Confirm how interim phasing of allocated parking spaces will be managed (e.g. restricting parking to 561 within a garage with a capacity of 692 spaces during Ph 1).	With the reduction in the size of the garage, the resulting parking supply (641) is in alignment with the projected demand (581) at initial project

		occupancy. No further parking modification is required. Since the previous submission, the parking count has been reduced, but still remains above the projected demand at occupancy. There are now 610 spaces in the garage and 14 on the site, for a total of 624.
Table 5 Drive Mode Split Targets	Does "Drive" include all carpool occupants?	No, only the driver counts towards the percentages in this table.
6 Mode Split Target Strategies	Table 7 is not provided. Revise last sentence on page 20 to confirm intent.	Table number was mislabeled and should read Table 6.
Table 6. TDM Strategies - Commitments	What is the level of subsidy? 100%?	The Roux Institute is currently running a pilot program with METRO. Bus passes will be subsidized long term and the level of subsidy will be determined based off the pilot program.
	What happens to the interior bike parking when more vehicle parking is needed?	The Roux Institute at Northeastern anticipates that both bicycle parking and vehicular parking demand will continue to increase as enrollment increases, so it is anticipated the bicycle parking remains in the garage until and if it could be accommodated elsewhere. The Roux Institute at Northeastern University will continue to investigate additional measures to support reduction of vehicular trips to the site including remote parking in connection with transit and investment in additional alternative mode infrastructure.

	The current plans show substandard width bike lanes (4').	Sherwood Street will be designed to accommodate a shared use path as requested by the City of Portland. Sherwood Street has been updated to accommodate a shared use path as requested by the City of Portland. Revised Sherwood Street Plans are included as part of this submission.
	Where are the on-site showers and lockers planned to be located? Is there a campus gym?	Per Cannery Building Drawing A-100, there are on-site showers and lockers in the Lower Level of the Cannery Building. There is not a campus gym.
	What is the anticipated cost/month for parking spaces --> market rate?	Users will be charged market rates for parking.
	Confirm transit pass subsidy. Not a transit pass provided via employee/student ID as done by most institutions (USM/SMCC, etc) with no out of pocket outlay required?	The Roux Institute is currently running a pilot program with METRO. Bus passes will be subsidized long term and the level of subsidy will be determined based off the pilot program.
	Where and how will carpool parking be prioritized?	Grade level priority parking spaces will be provided as demand dictates.
	Can electronic screen displaying transit information be provided in the lobbies of the two main Ph 1 buildings for increased visibility of multimodal options?	Informational signage will be provided in both buildings.
	Can 'simple' AC outlets be added in vicinity of interior bike parking in short-term to encourage e-bike/bike usage in general?	Yes.
	Reported survey results said high desirability of bikeshare. Can this be implemented in short-term versus long-term?	Yes. The bike share location is shown on the Figure 5-1 Bike Amenities and Circulation.

Justin Pellerin, P.E. - DPW Sherwood Street and Campus Site Plan Response Comments		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Sherwood Street Roadway Improvement Comments		
1.	New catch basin structures in Sherwood Street should be installed per City of Portland Technical Manual standards. Each basin should have a headstone and be installed with a 3' sump. Include applicable details in the plan set.	Noted. The details will be revised accordingly and provided with revised Civil Drawings to be provided with subsequent submission. An updated drawing set is included as part of this submission.
2.	All storm drains and underdrains 10" and greater shall meet the City's stormdrain material specifications listed in section #2 of the technical manual.	Noted.
3.	It appears the proposed 12" underdrain/stormdrain pipe running along the southerly curb line between station 212+00 and 213+00 is in conflict with an existing gas main. Is the applicant working with Until to relocate the gas main in this area?	This Sherwood St design is being revised to alter lane widths and add a shared use path as suggested. Coordination with Unitil will take place during future design if required. There is approximately 18" of separation between the gas and UD trench at the end of the main. The gas main does end where it is shown on the plans. Based on the street markings it appears that this main is capped stub just beyond the last service just beyond STA 213+00.
4.	DPW is in the process of inspecting the existing storm drain line in Sherwood Street. Improvements may be needed within the project paving limits of the pipe is found to be in poor condition.	Noted.

Campus Site Plan Comments:		
1.	The existing condition plans and design plans should be updated to address the storm drain alignment issues and to resolve any remaining utility conflicts between the 12" water main and the City's storm drain system in Sherwood Street.	It is our understanding Public Works is completing CCTV evaluation of the storm drain in Sherwood Street. We will update our existing conditions and proposed plans accordingly. We are working with City staff to gather existing conditions information for Sherwood Street to confirm design for that portion of the project and will provide further information as it is available.
2.	PWD should review the proposed sanitary connection into Ex SMH-1. The City's mapping indicates this structure is owned by PWD; however, that is somewhat unclear.	PWD confirmed the structures are owned by PWD. We are working with PWD on this sewer connection and will provide documentation of approval upon receipt.
5.	The existing condition of the structure (EX-SMH-1) and outlet pipe out of EX-SMH 1 should be thoroughly inspected and possibly replaced if in poor shape. If EX-SMH is found to be in poor condition it appears an alternate alignment could be utilized which would result in the Elimination of EX-SMH-1 and Proposed SMH-1 (And S-1) by connecting S-2 directly to un-named EX SMH.	Noted. We are working with PWD on this sewer connection and will provide documentation of approval upon receipt.
6.	The plans should be updated to depict the locations of all the required ESC Controls including but not limited to dewatering/stockpiling areas with proposed BMPs and the proposed location of the anticipated stone construction entrance.	The Civil Drawings will be updated accordingly, and provided as part of a subsequent submission. An updated civil drawing set is included as part of this submission.
7.	The applicant shall confirm the sizing and design of the proposed external grease trap associated with the LRC	The applicant will provide updated data on the size and design of external grease trap and verify

	building and verify it is designed in accordance with Chapter 7 of the City's sewer use rules and regulations	it complies with Chapter 7 as part of a subsequent submission. An external grease trap is no longer required for the site. Internal grease traps will be specified where they are required with future buildout of interior spaces.
8.	The project will be required to submit a dewatering plan to the Water Resource's Compliance Coordinator in accordance with chapter 8 of the City's sewer use rules and regulations prior to any excavation work and dewatering activities occurring on-site.	Noted. A general note will be added to the Civil Drawings, which will be provided as part of a subsequent submission. An updated civil drawing set is included as part of this submission.
Ann Machado – Zoning Administrator Review Comments		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Section 8.5.7.D		
1. B-5 is the underlying zone	No dimensional requirements under Table 7-E except height which is governed under the IOZ requirements.	Noted.
3. Street Wall Height	Min. 45' & max. is 105' -LRC – 68.6 -Garage – 66.2 stair tower (86.7)	This standard is met.
4. Stepback	Needed at street wall if higher than 105' – 10' min. – LRC goes from 22.5' to 13.5'	This standard is met.

5. Building Length	a. no building is longer than 250' – don't need publicly accessible corridor – figure 3.3 244'	This standard is met.
Building Height – Figure 8-F	The maximum height for the various height zones based on the average grade appears to be met. My only issue is with the Average Grade plans. The sheet (AS61.0 gives the average grade of the garage as 20.8. I calculate it as 18.8'.	Elevations have been calculated at the four corners of the garage and do not include the daycare building. Please refer to figure 8-FA attached to this document for a visual summary. As site grades have been modified slightly during design, the average grade for the garage has changed, increasing from 20.8 to 21.1. Figure 8-FA attached to this document has been revised to reflect this change.
Shoreland Zone	The highest annual tide has been located but I don't see a 25' shoreland zone setback located.	The 250' Shoreland Zone setback will be clarified on the revised Civil Drawings to be provided as part of a subsequent submission. An updated civil drawing set is included as part of this submission.
Floodplain	Both the approximate FEMA flood zone line and the approximate flood zone line based on EL 9 are shown. I'm not sure what they mean by the approximate FEMA flood zone line. Are they overlaying the FIRM from 1986? EL 9 impacts the LRC building and we will need a floodplain permit application for new construction and elevation certificates.	Both the FEMA FIRM flood zone line (from the FIRM) and an approximate flood zone line based on the existing contours and the flood elevation (EL 9) are provided. While the approximate flood zone line (EL 9) intercepts the LRC, the proposed FFE is 22.5, and therefore a floodplain permit application is not required.
	The other questions that I have is about the timing of the new flood zone maps. We still don't know when the new maps will go into effect. Obviously, we are reviewing the current site plan under the current floodplain maps. My question is, if the new maps go into effect before the building permits are applied for, would the buildings	Noted. We anticipate the City will make a determination on timing. It is our understanding that the new flood zone maps will go into effect in June of 2024, and that any projects that do not yet have building permits will be required to comply with the new maps.

	then need to meet the base flood elevation for the new maps?	The project has been reviewed relative to the new elevations, and we believe we will be in compliance.

4. ATTACHMENT 4: SUSTAINABILITY CHARTER COMMENT RESPONSES

For the comment responses provided by the Applicant, responses provided on February 5, 2024 remain in black text. Responses added for the March 26, 2024 response have been added in blue text.

Sustainability Charter		
Code mandated items		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Energy, Responsible Materials, and Occupant Experience	To be determined at time of permitting.	We understand these will be reviewed as part of the building permit process.
Energy		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Eliminate on-site fossil fuels in building HVAC and Food service.	Heat pumps are proposed in the LRC building. Additional information will need to be submitted for the Cannery Building and the Structured parking & preschool facility building to confirm that efficient electrical mechanical systems are being utilized.	Fossil fuels will not be utilized for HVAC and food services. Design of mechanical systems will be provided as part of the building permit process.
	Submit a narrative confirming how fossil fuels will not be combusted on the site for any of the uses of the site (e.g., lab, café space).	The project is committed to utilizing all electric kitchens throughout. The design of these systems will be provided as part of the building permit process.

	Complies: Hot water is provided through electric heaters, as noted in Sheet P1.01.	No action required.
Provide infrastructure for future PV installation.	PV locations identified for the LRC and Cannery buildings, but is not identified for the Structured parking & preschool facility building. Update the floor plans for the Structured parking & preschool facility building to identify the location of future PV equipment for the building.	Conduits will be provided from roof areas to central electrical rooms to provide infrastructure for potential PV systems in the future. Details of this design will be provided as part of the building permit process.
Design the building to be 30% better than ASHRAE 90.1 2019 and 15% of roof area dedicated for PV.	Geothermal HVAC shown in Sheet GT-01 and photovoltaic systems >15% of the roof area are proposed for the roof of the LRC building. Applicant shall submit a narrative demonstrating how the combined systems will be designed to be 30% better than ASHRAE 90.1-2019.	Thorton Tomasetti ("TT") is performing an energy model for the project. The report will be submitted to the city for review prior to or as part of the building permit application.
Embodied Carbon		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Reuse existing historic building.	Applicant shall provide narrative clarifying how the submitted strategy is being achieved through the proposed renovation of the Cannery Building.	The Bean Building is being designed to support a flexible program. This includes limited use of permanent partitions which supports the strategy indicated.
Advocate for Environmental Product Declarations (EPDs) for all concrete used on the project.	Applicant shall identify when procurement for materials is anticipated to take place and when copies of procurement notices can be sent to City Staff for confirmation relative to the submission & issuance of building permits.	The project teams will require EPDs in specifications. A procurement schedule will be generated and shared with City when available.

Perform a whole building life cycle analysis (LCA) to study carbon conservation measures.	Identify when a LCA will be completed/be able to be submitted for review by City Staff prior to issuance of building permits for the project.	An LCA of each building will be submitted to the city for review prior to or as part of the building permit application.
Reduce the embodied carbon of structural materials in the building by 15% from a typical design.	Complies: Mass timber is proposed for a portion of the building.	No action required.
	Identify when a LCA will be completed/be able to be submitted for review by City Staff prior to issuance of building permits for the project.	An LCA of each building will be submitted to the city for review prior to or as part of the building permit application.
Responsible Materials		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Source wood products from Maine forests and/or sustainably managed forests or salvaged/reclaimed wood suppliers.	Applicant shall identify when procurement for materials is anticipated to take place and when copies of procurement notices can be sent to City Staff for confirmation relative to the submission & issuance of building permits.	A procurement schedule will be generated and can be shared with City when available.
Advocate for the removal of PFAS chemicals in other targeted product categories.		

In coordination with the contractor, identify key materials to procure from the state of Maine.		
Divert at least 50% of non-hazardous construction and demolition waste from the landfill.	Prior to a certificate of occupancy, a waste hauler contract for the site shall be submitted to review and confirm that 50% landfill diversion of non-hazardous materials will be ensured.	No action required at this time.
	Reuse of rail lines and bean pots have been proposed as part of interpretive work related to historic preservation. On the project website, under Site Work, a July 28, 2023 post identified historic elements that will be reused and construction materials to be reused/recycled. Update application materials to identify how the construction materials are being reused/recycled.	Website content from July is not the most current material. Review of project should be contained to the site plan application. If materials will be reused/recycled, the documents will be updated accordingly. Landscaping design details have not been finalized.
Target Red List free finishes in targeted spaces.	Complies: October 19, 2023 Design Development document states that red list free materials shall be used.	No action required.
Use best practices for bird friendly design.	Bird safe glass treatments are proposed for some of the glass in the LRC building. Confirmation that the entirety of the building glass is bird safe has been requested to meet §8.5.7(F)(6) of the Land Use Code.	The applicant will provide more information as it pertains to bird safe glass in the Cannery Building's new windows as part of a subsequent submission. The applicant will provide a glazing schedule for the Structured Parking and Daycare Building that includes treatment for Bird Safe glass complying with Maine's Legislation LD 670 and conform to

		the City of Portland's Bird Friendly Ordinance as part of a subsequent submission. The Roux campus buildings will follow the City of Portland's *Bird Friendly Ordinance LD-670*. Per the ordinance, all new buildings on campus will comply by providing facades that have been treated to have a Maximum Threat Factor of 30 (TF 30) up to 75 feet above grade. A maximum of TF 30 will be achieved through a combination of ceramic fritted glass, angled glass facades and a variety of articulated materials such as metal fins and granite window systems. Final spec and design of glass will be provided as part of the building permit submission.
Water		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Reduce indoor water use from 25% from a code baseline building.	Flow rates for plumbing fixtures have not been provided as part of the submitted application materials. Update application materials to state the proposed flow rate for plumbing fixtures and the applicable code requirements for flow rate.	Flow rates for plumbing fixtures will be provided as part of the building permit process.
	Urinals are proposed in public bathrooms for the LRC, but are not shown in the Cannery Building or the Structured parking & preschool facility building. Clarify why urinals are not proposed in the Cannery Building and whether any urinals are proposed for the Structured parking & preschool facility building.	Urinal counts will be provided as part of the building permit process.

Maximize the use of native and drought tolerant landscape plants.	Complies: Native and low-maintenance plantings have been prioritized to require fewer short- and long-term maintenance needs.	No action required.
Stormwater Management in accordance with Maine Department of Environmental Protection Best Management Practices Manual and City of Portland Technical Manual.	Complies: Application is designed to meet Chapter 500 standards and has incorporated LID strategies such as protecting natural drainage systems, utilizing low-maintenance landscaping, minimizing impervious surfaces, and providing vegetated open-channel conveyance systems.	No action required.
Prohibit the use of all synthetic pesticides and fertilizers for the operation and maintenance of landscape and agriculture through Integrated pest management (IPM)conducted as part of an overall Plant Health Care Program for the Roux site.	Complies: Native and low-maintenance plantings have been prioritized to require fewer short- and long-term maintenance needs.	No action required.

Occupant Experience & Equity		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Optimize natural daylight and mitigate glare.	Confirmed in General Note 8 on Sheet A12.01 of the architectural plans for the LRC building. Confirmation of shades or curtains for the Cannery Building and the Structured parking & preschool facility building have not been provided. Update architectural drawings to confirm that shades or curtains will be provided for regularly occupied spaces that face east, west, and south for the Cannery Building and the Structured parking & preschool facility building.	Information regarding shades or curtains for the Cannery Building and Daycare facility will be provided as part of the building permit process. Shades are not assumed at structured parking as space is not regularly occupied.
Incorporate biophilic design principles.	Mass timber and stone are proposed to be used for the LRC building. Currently, only non-natural materials are identified for the Structured parking & preschool facility building. Update architectural drawings to identify what natural materials are proposed to be used for the Structured parking & preschool facility building.	The daycare facility will incorporate natural material on the interior. The materials will be indicated during the Planning Board process. The structured parking will incorporate a biophilic design through the expression of waves in the design of the west facade.
	Provide a supplemental narrative and/or sample designs on how the proposed art and signage for the campus will create cultural and ecological connections to place, as well as the locations for the proposed locations for art and signage.	Design of the proposed art/signage will be provided as part of the building permit process.
Use the building to educate building and site users.	Identification of informational signage on sustainability features of the LRC & Cannery buildings is not included in the signage plans. Update the architectural drawings and/or signage plans to identify where the proposed informational signage on sustainability features of each	Design of the proposed signage will be provided as part of the building permit process.

	building will be located and the proposed design of the signage.	
Provide amenities to support public access.	The submitted floor plans for the LRC building include drinking fountains and/or bottle filters. The submitted floor plans for the Cannery Building and the Structured parking & preschool facility buildings do not show drinking fountains and/or bottle filters. Update floor plans for the Cannery Building and the Structured parking & preschool facility building to identify the location(s) of drinking fountains and/or bottle fillers.	Plans for drinking fountains/bottle fillers for Cannery Building will be provided as part of the building permit process. The Parking garage is a transient space so water fountains are not planned. The Daycare facility is not accessible to the public and the water needs of the staff and children are met by traditional sinks.
	Publicly accessible restrooms are provided in the LRC and Cannery buildings. Submitted floor plans for the Structured parking & preschool facility building do not provide enough detail to confirm whether restrooms will be publicly accessible next to the proposed shoreland open space. Update architectural drawings to clarify if and how publicly accessible restrooms will be provided.	For security and safety the Daycare facility is not publicly accessible. No public restrooms are planned for the structured parking.
	Complies. Shared-use facilities are provided throughout the site.	No action required.
	Complies. Benches are provided throughout the site.	No action required.
	Complies. Site wayfinding package is included as part of the application materials.	No action required.
Provide Gender inclusive restrooms.	Public, gender inclusive restrooms are provided in public areas in the LRC building. The split of restroom facilities in the Cannery Building connotes that bathroom facilities will not be gender inclusive. Confirm that the both public area bathrooms on the lower level of the Cannery Building are gender inclusive.	Both public area bathrooms on the lower level of the Cannery Building are gender inclusive.

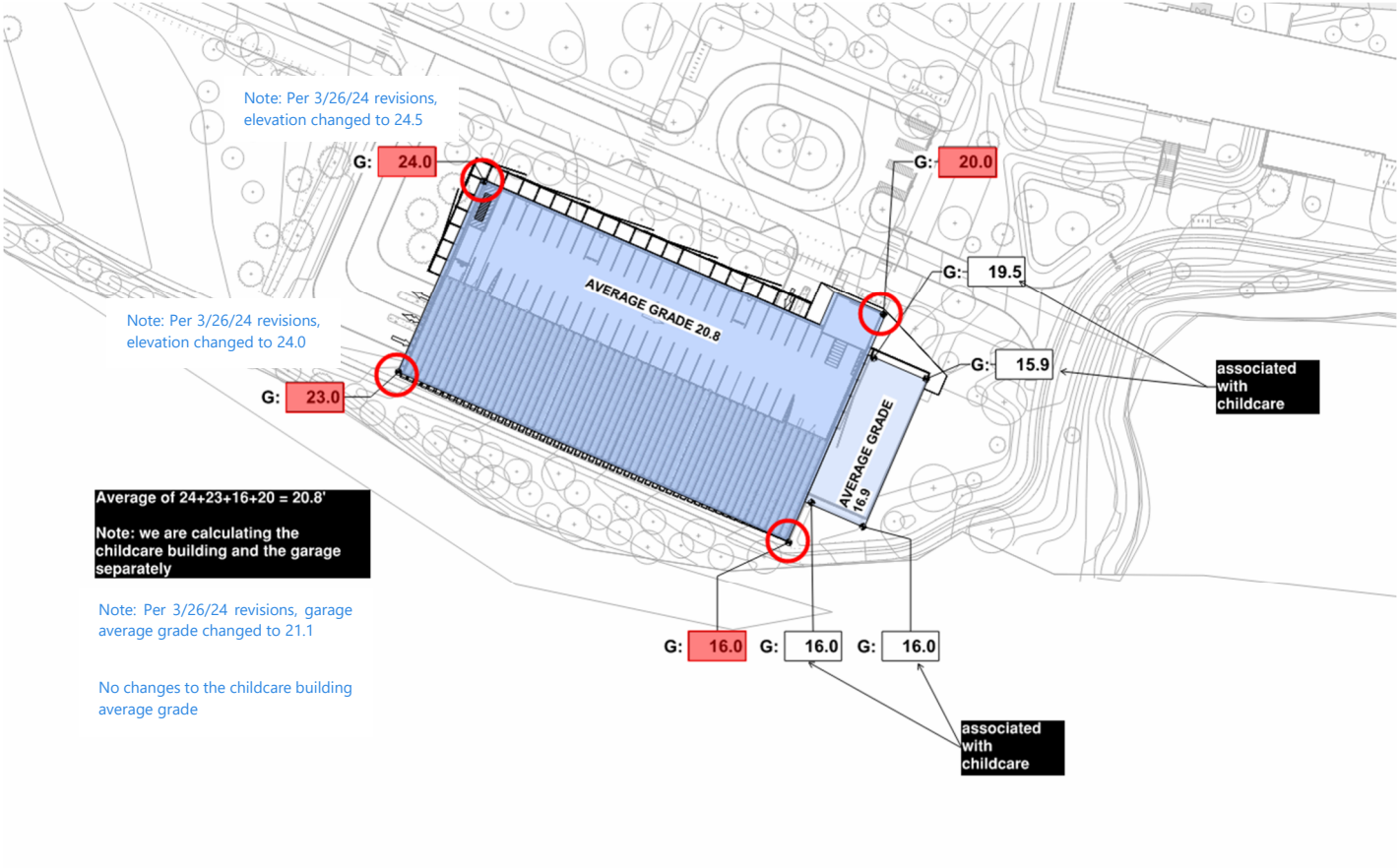
Provide lactation rooms.	Lactation rooms not identified in the floor plans for the LRC and Cannery buildings. Update floor plans to identify lactation rooms that include a locking door, sink, changing table, comfortable seating, lighting control and electrical outlets.	Updated floor plans will be provided as part of the building permit process.
Transportation		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Conduct study of EV charging needs. Provide required EV capacity to meet anticipated demand.	EV Charging Study is still under review by City Staff. As Study is under review, Application should confirm whether the charging should meet the demand in coordination with EV or PV requirements approved by the City.	The EV charging provided is intended to be in compliance with site plan standards.
	EV Charging assessment should be coordinated with the submission of TDM reports. City staff encourage the assessment of EV charging for automobiles and bicycles as part of the campus goals to reduce SOV automobile trips.	No action required at this time.
Integrate quality/ secure bicycle storage into the site design and provide shower facilities.	Bicycle storage is proposed on the lower level of the Cannery Building. Bicycle storage is not provided in the LRC building. Update floor plans for the LRC building to identify interior, secure bicycle storage.	Users of the LRC building will utilize bike storage on site, provided in either the Bean Building and/or in the structured parking.
	Complies: Showers are provided on the lower level of the Cannery Building.	No action required.
	Bikeshare stations are not currently identified in the submitted application materials. Update application	The bike share location is shown on the Figure 5-1 Bike Amenities and Circulation.

	materials to identify proposed locations for bikeshare stations for review and further discussion with City staff.	
	Complies: Exterior bicycle parking is distributed throughout the site for buildings in the first phase and future phases of development. As mentioned three standards above, secure bicycle storage will need to be provided for in the LRC building.	No action required regarding exterior bicycle parking. Sufficient indoor bicycle storage will be provided in Cannery Building or the Parking Structure.
	Complies: Application identifies opportunities to reduce SOV trips through unbundled parking, ongoing collaboration with METRO and MaineDOT, on-site shared-use facilities with anticipated connection points to the rest of the peninsula and off-peninsula, as well as pier improvements to facilitate water taxi service.	No action required.
Resilience		
Standard	***Comments/Recommendations made by Reviewer***	***Comment Response provided by Applicant***
Incorporate near-term future-projected climate change data (2050s) in design of mechanical, electrical, and	Critical building infrastructure has been identified in the LRC building to be located above 22.5 feet NAVD88. Additional information still needs to be provided to confirm that no critical building infrastructure is located below 22.5 feet NAVD88 for the Structured parking & preschool facility building, particularly in the Preschool Facility portion of the building.	No critical infrastructure will be located below 22.5 feet in the structured parking or daycare facility. That will be confirmed in the building permit process.

plumbing systems and/or components on a regular replacement cycle. Incorporate long-term future-projected climate change data (2100+) in the design of the building and infrastructure, including flood resistant materials below the 2100 sea level rise design flood elevation and elevate critical infrastructure above this elevation.	Heat projections with MEP consultant not included with application materials. Applicant should clarify the anticipated development of the projections and point for City staff to review prior to Certificate of Occupancy.	Required information will be provided prior to Certificate of Occupancy.
Prepare emergency action plan and provide appropriate level of backup power to support life safety. Incorporate campus-wide emergency	Unable to confirm whether generator can provide 48 hours of energy for essential operations. Applicant should provide supporting documentation based on the proposed storage capacity or the manufacturer that the proposed nitrogen generator can supply energy for 48 hours to essential operations.	Refer to mechanical drawings for fuel oil tank size and location. LRC generator has been sized for 48 hours of run time.
	Emergency preparedness plan not submitted. Applicant should clarify the anticipated development date of the	An emergency preparedness plan will be submitted prior to Certificate of Occupancy.

preparedness planning to enhance overall resilience of the campus/site community.	plan and point for City staff to review prior to Certificate of Occupancy.	
	Complies: Generator provided on Level 1 of LRC building.	No action required.

FIGURE 8-FA: AVERAGE GRADE CALCULATION FOR GARAGE AND DAYCARE



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**	**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**	**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

2. PERMITTING

For the proposed Phase 1 development work, a Major Site Plan Application is required along with a number of associated permit applications.

2.1 Permits Required

2.1.1 Planning Board Review

The proposed Phase 1 development work will require approval by the Planning Board for multiple permit applications.

Major Site Plan

The project's size and scale qualify it for a Major Site Plan that will require review and approval by the Planning Board.

Site Location of Development (SLOD) Permit

The project is subject to the Maine Department of Environmental Protection (Maine DEP) regulations for a Site Location of Development Act (SLOD) or Site Law Permit. It is our understanding that the project will be reviewed as a new SLOD permit by the City of Portland under their Delegated Review Authority. A separate SLOD permit application has been provided with this Site Plan Application, and 3 paper copies will be provided for the City to give to the Maine DEP.

2.1.2 Other Local Permits

Portland Harbor Board of Harbor Commissioners Marine Construction Permit

The project requires review by the Board of Harbor Commissioners for proposed pier construction, waterfront improvements, and outfall installation in navigable waters.

Flood Hazard Development Permit

The project requires review by the Building Authority for building construction and renovation in Special Flood Hazard Areas.

Historic Preservation Certificate of Appropriateness (COA)

The project requires review by the Historic Preservation Board for the building and site areas included in the Historic Landmark Designation, as reflected in **Figure 2-1**. In accordance with the City's Land Use Code, Chapter 14 Section 8.5.7.J, a Certificate of Appropriateness will not be required for the demolition of the Codfish Building or construction of a new pier and related infrastructure, including future alterations to the pier structure. The Board's review of the pier is limited to any activity that would require a Certificate of Appropriateness that is proposed on top of the newly constructed pier. Additional information regarding Historic Preservation is included in Section 3.3.9 and Section 8.5.

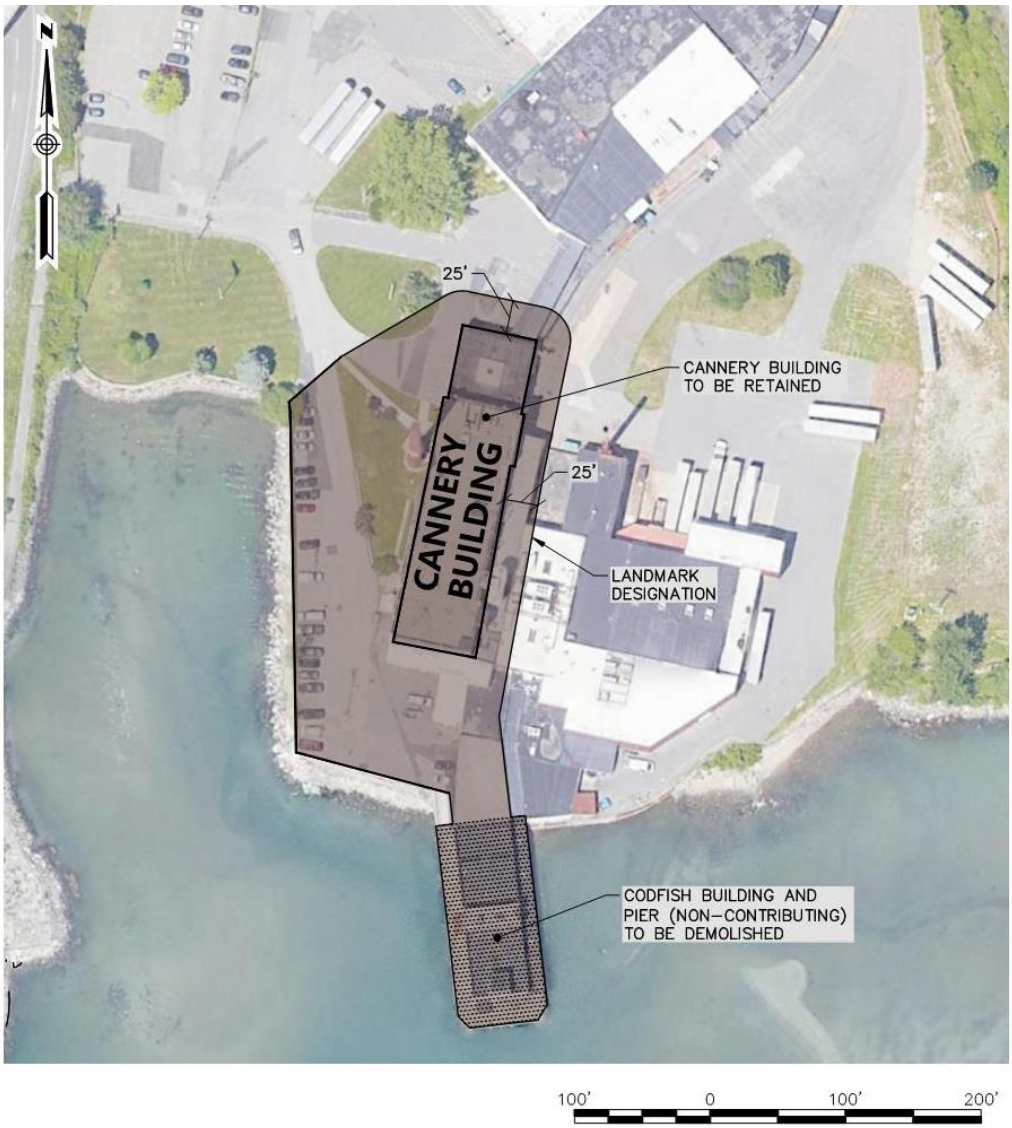


Figure 2-1: Landmark Designation

2.2 Evidence of State and/or Federal Approvals

The following state and federal permits will be required for the proposed work:

- Maine DEP Site Location of Development Act Permit (reviewed by City of Portland under Delegated Review Authority);
- Maine Construction General Permit Notice of Intent;
- Maine DOT Traffic Movement Permit (TMP);
- Maine DEP NRPA Individual Permit;
- Army Corps of Engineers General Permit; and
- FAA Notice of Proposed Construction.

Copies of these permit approvals will be provided to the City of Portland, upon request.

3. ZONING

Phase 1 of development is associated with multiple Zoning Districts including:

- B-5 Urban Commercial Business Zone (B5);
- Shoreland Overlay Zone; and
- The Roux Institute at Northeastern University Institutional Overlay Zone (IOZ).

3.1 B-5 Zone

As previously noted, the Portland City Council unanimously approved the zoning amendments to change the Site's underlying zone from Industrial to B-5 Mixed-Use Business in February 2023. The attached Zoning Assessment Table shows that the project complies with dimensional requirements specified in the City's Land Use Ordinance. For the B5 zone, most standard zoning analysis values are not applicable.

3.2 Shoreland Overlay Zone

The Site has roughly 1,400 linear feet of waterfront, within associated Flood Hazard and Shoreland Zones. The City's Land Use Code designates a shoreland zone within 250 feet of tidal water bodies. A minimum setback of 25 feet from the normal high-water level for principal and accessory structures will be maintained within the shoreland zone.

3.3 The Roux Institute at Northeastern University Institutional Overlay Zone

The following section describes the project's consistency with the regulatory framework of the Institutional Overlay Zone. The regulatory framework was incorporated into the City of Portland Land Use Code, and section references are included below with each standard.

3.3.1 Phasing and Monitoring (8.5.7.B)

As noted in the IDP (Institutional Development Plan), the Roux Institute Campus will present a coherent and holistic site at each phase of construction. The campus plan also enables future growth without sacrificing the near-term completeness. To allow for growth and coherence at each phase, the following design strategies and features are employed in Phase 1.

- Three acres of permanent, significant public space is being set aside in this first phase of development (**Figure 3-18**). It will provide a major focal point and anchor for the public life of the site in both Phase 1 and the long term.
- A complete network of vehicular, pedestrian and bicycle circulation routes are established in Phase 1 (**Figure 3-17**) which will continue to serve long-term development. A comprehensive system from Sherwood Street to the waterfront allows access around and through the site that is appropriate to each mode of transportation. Building a complete system in Phase 1 minimizes the interruption to traffic and circulation patterns during future expansions. These initial circulation networks are enhanced with site-wide lighting and wayfinding that is adaptable to future development. Lighting may be added where future uses require, and wayfinding and directional signs may be augmented with added information while remaining at key waypoints and intersections.

- Major underground utility corridors for water, sewer, electrical and telecommunications are similarly established in Phase 1 and intended to be maintained into the long term. Branch service will be tied to the main distribution corridors when new development occurs.
- Site stormwater management capacity is developed within the first phase to support a fully built-developed site.
- Future development parcels have been set aside with appropriate dimensions for pedestrian buffers, utility service access, building types and programs consistent with the Regulatory Framework.
- A comprehensive landscape strategy considers all areas of the campus in a Phase 1 planting approach. As shown in the Planting Zone Figure Plan (**Figure 3-14**) and detailed planting plans, the campus is composed of distinct ecological regions that are native to Maine ranging from a Coastal Edge at the water and a meadow near the site entry from Sherwood Street. Future development sites occur within the meadow planting zone which features low grasses, shrubs and flowers that establish quickly and yet are easily removed upon initiation of a new phase of construction.

The Learning, Research and Collaboration Building and Bean Building will accommodate initial growth of programs and expanded partnerships within shell space. This means immediate growth does not require new ground-up construction on other parts of the site.

3.3.2 Uses (8.5.7.C)

The proposed uses for Phase 1 are consistent with the IOZ regulatory framework, and include development of a post-secondary school, with associated laboratory, research, office space, and café'; restoration of the historic Bean Building to allow for creation of business incubator space; parking structure, childcare facility, and public pier with ramps and floats.

3.3.3 Dimensional Requirements (8.5.7.D)

Building Height

The Phase 1 buildings have been designed in compliance with the IOZ Height Overlay Map, as shown in **Figure 3-1** and **Figure 3-2** below. Proposed buildings over 50 feet are, at a minimum, 40 feet apart from other buildings. Building heights that span two or more height zones are measured by calculating the highest point of that portion of the building within a particular height zone. If the roof is sloped, height is measured at the midpoint of that portion of the slope located within the particular height zone.

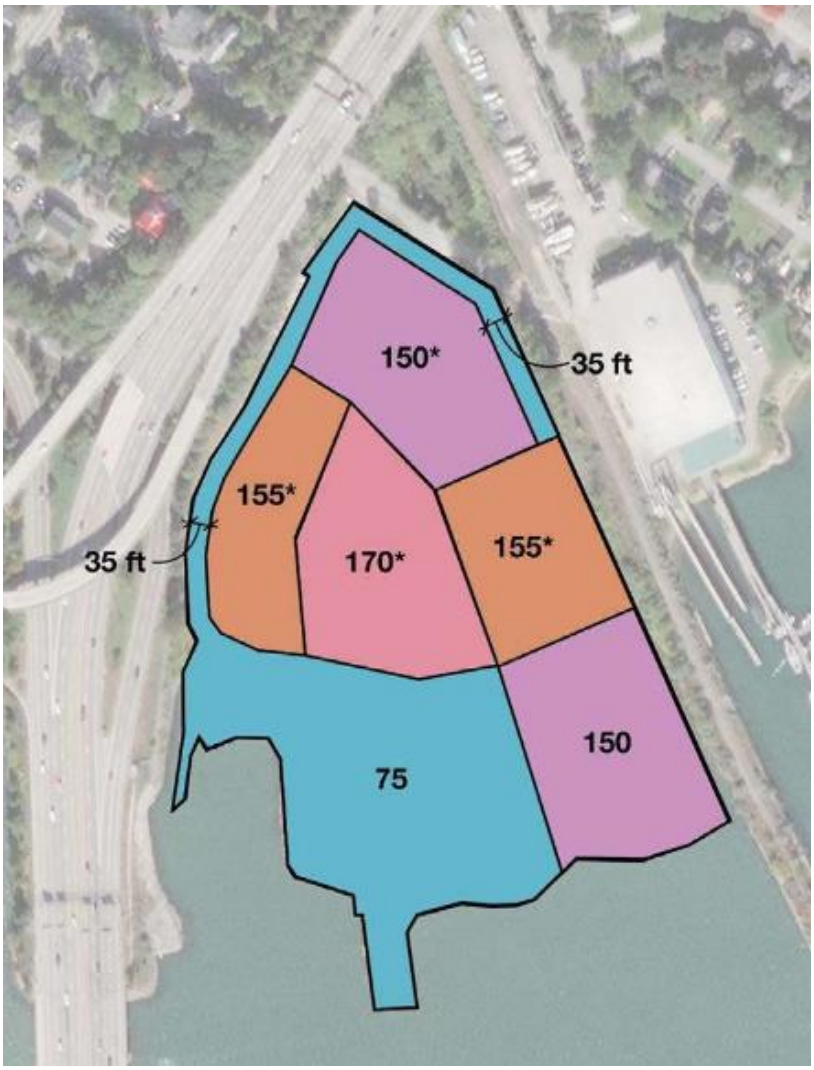


Figure 3-1: IOZ Height Overlay Map (Land Use Code Figure 8-F)

Note: For zones shown with an asterisk (*), no building floorplate shall exceed 35,000 square feet above height of 75 feet.

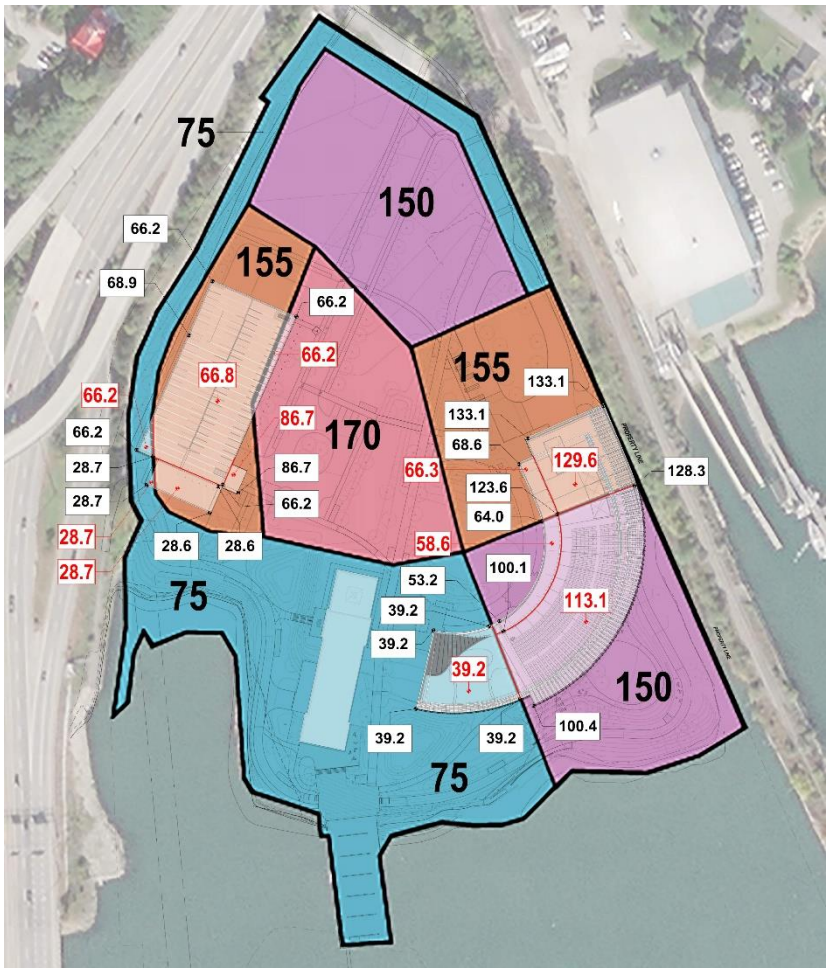


Figure 3-2: Building Heights

Per the City of Portland's Land Use Code, maximum building heights are calculated from average finished grade. **Figure 3-2** shows the calculated building heights around the Site, and figures showing the average grade as well as the height calculations are furnished under separate cover in the Drawings file. The resulting building heights are summarized in the table Below:

Table 3-1: Building Height Summary

Building (Map Color)	Max Height (ft) per Overlay Map	Proposed Maximum Height (ft)
Learning, Research, and Collaboration Building Orange	155	129.6
Learning, Research, and Collaboration Building Purple	150	113.1
Learning, Research, and Collaboration Building Blue	75	39.2
Parking Structure Orange	155	66.8
Parking Structure Pink	170	66.2
Parking Structure Blue	75	66.2
Childcare Facility Blue	75	28.7
Childcare Facility Orange	150	28.7

Street Wall and Building Stepbacks

As demonstrated by **Table 3-2** below, the street walls of principal buildings will have a minimum street wall height exceeding 45 feet and maximum height of 105 feet, in compliance with the IOZ regulations. Street walls are designated at the building's principal entrance, facing the open space, primary pedestrian routes, and entrance drives. A step back with a minimum depth of 10' is provided.

Table 3-2: Building Street Wall Summary

Building	Street Wall Designation	Street Wall Length	Street Wall Height
Learning, Research, and Collaboration Building	West Elevation Facing the Round	244'	68.5' max -51' min
Parking Structure	East Elevation Facing the entry drive and Promenade	219'	45.1

Refer to the following figures for step back and street wall measurements.

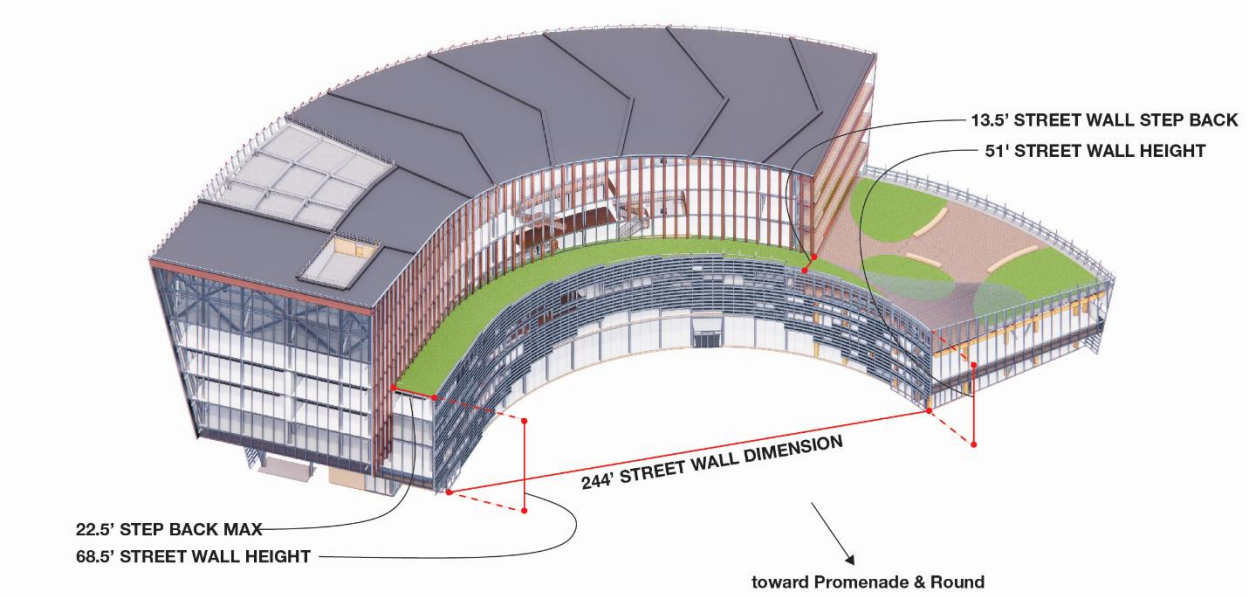


Figure 3-3: Learning, Research, and Collaboration Building Street Wall and Step Back Measurements

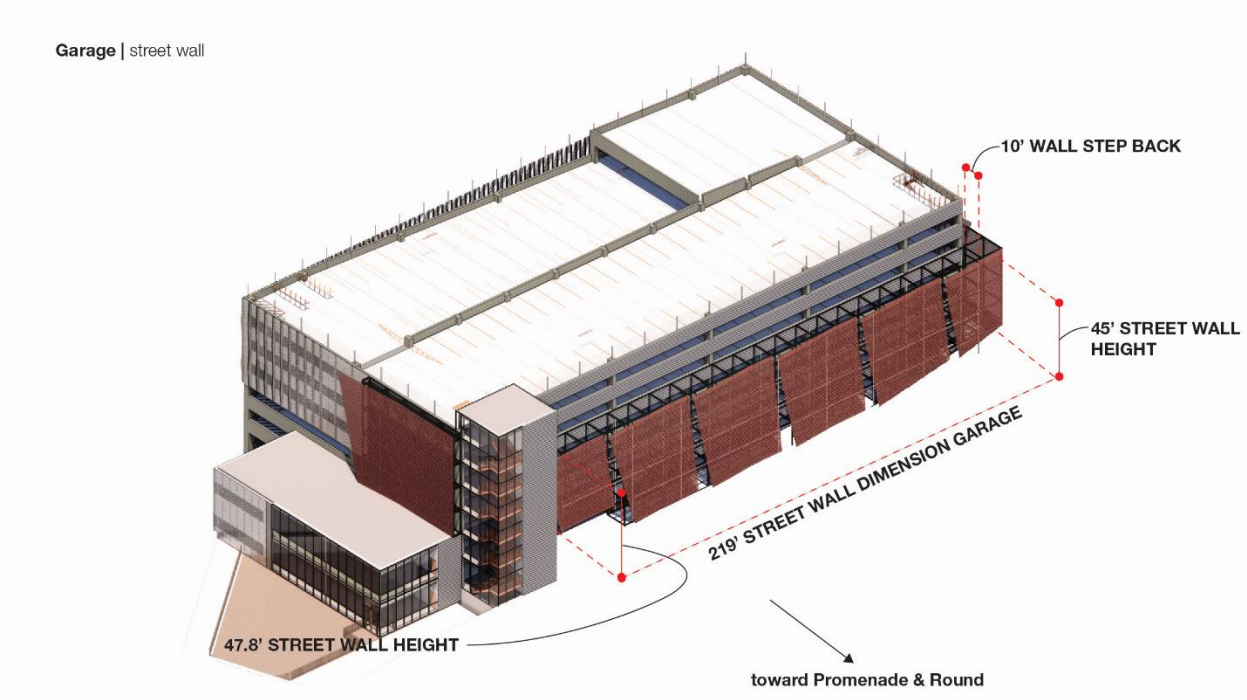


Figure 3-4: Garage Street Wall and Step Back Measurements

Each of these street walls will have the required 10-ft step back at a height above the minimum street wall height of 45 feet, but below the maximum of 105 feet. These street walls are less than 250-ft in length, and therefore publicly accessible corridors are not required.

Transitions and Buffers

In addition to the existing buffers of I-295 and the rail corridor, the development further eases the transition to and from the campus through the design in areas shown in **Figure 3-5** and sections in **Figure 3-6** and **Figure 3-7**.



Figure 3-5: Site Plan Section Key

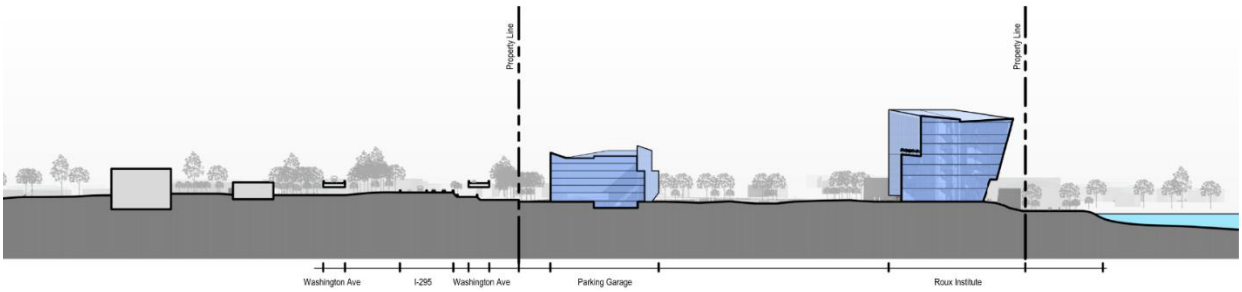


Figure 3-6: Site Section 1

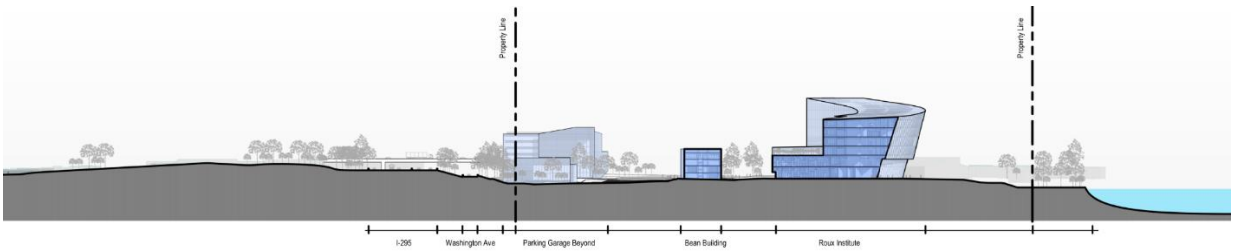


Figure 3-7: Site Section 2

Public open space will ease transition from the smaller scale of Sherwood Street. A transition onto the campus will also be accomplished through thoughtful facade design at the pedestrian level and above. Potential nuisance features like dumpsters, air handlers, backup generators, and parking are appropriately screened. Buildings have visually interesting elevations that avoid blank walls to respect the adjacent neighborhood and facilitate a sense of permeability and welcome.

The shoreline transition area between the buildings and the water serves as meaningful public open space. Building facades facing the water act as public facades with views designed for interest from and across the water including the Eastern Promenade Trail and more broadly the entire peninsula.



Figure 3-8: I-295/Tukey's Bridge Rendering

The transition area between the campus and I-295 contains a height limitation of 75 feet along the edge and between the highway and the B&M Cannery Building, preserving the historic view of the building from the highway and easing the transition to the greater allowable building heights in the center of campus.

The transition area along the edge of the campus adjacent to the rail corridor also contains a height limitation of 75 feet along the edge of the property closest to the residential neighborhood, further easing the transition to the greater allowable building heights at the center of campus, mitigating shadow impacts to adjacent properties.

3.3.4 Transportation (8.5.7.E)

Project consistency with IOZ Transportation requirements is described in Section 5.

3.3.5 Environment (8.5.7.F)

Project consistency with IOZ Environmental requirements is described in Section 3.3.7 and Section 6.

3.3.6 Mitigation Measures (8.5.7.G)

As discussed in Section 6, impacts to natural resources will be mitigated in accordance with local, state, and federal standards.

3.3.7 Design (8.5.7.H)

Landscape and Public Space

The campus provides a variety of landscaped open spaces throughout all phases of development to enhance the beauty of the waterfront and foster social interaction. Each space provides a different character and opportunity to engage with the environment and in a variety of social settings as described below:

Promenade

The central circulation element of the site design is the Promenade, a 12-foot-wide linear pathway that connects the Site by creating a central pedestrian spine from the sidewalks along Sherwood Street to the Pier and Coastal Path.



Figure 3-9: Promenade Rendering

Pier Plaza

The Pier Plaza, sitting at a confluence of circulation, connects the Pier with the Bean Building, the coastal path, and the waterfront.



Figure 3-10: Pier Plaza & Pier Rendering

Pier

The new Pier is a replacement of the existing Cod fish pier. The pier decking will be marine grade timber. Light poles reflect the façade of the codfish building and create an open, central space for multi-purpose gathering. The perimeter railing includes a lean-rail element to allow for comfortable standing, fishing, viewing or other standing activities along the pier edge. The Pier will provide access to water dependent uses, such as water taxi and/or shuttle, paddleboarding and kayaking.



Figure 3-11: Pier Rendering

Coastal Walk

The shoreline includes a Coastal Walk, a 12' wide multi-modal pathway, designed for bicycles, pedestrians, and emergency vehicles. The Coastal Walk provides access to various points along the waterfront, with seating, bike parking, and vantage points. It is part of a trail around the perimeter of the entire campus.



Figure 3-12: Coastal Campus Rendering

Bay Overlook

Spilling out from the Learning, Research, and Collaboration Building, the Bay Overlook space provides a lawn space for gatherings and views to Casco Bay. This space is appropriate for casual or formal gatherings. The Overlook is situated to provide a special vantage point above the adjacent railroad tracks and former rail bridge.

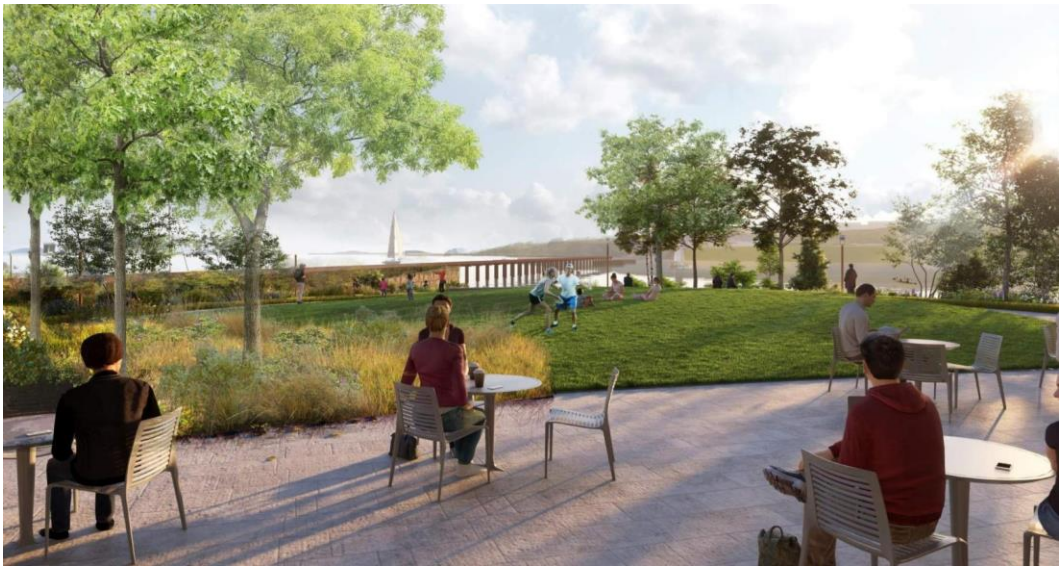


Figure 3-13: Bay Overlook Rendering

Tiered Seating

Adjacent to the Overlook is a series of tiered seating benches set into the hillside. The arrangement of wood and concrete seat-walls overlooks the water and allows for a relaxing informal space for views of Casco Bay the Eastern Promenade, and Munjoy Hill neighborhood.

Planting Approach

The landscape and planting approach for the campus converts a former nearly fully hardened industrial Site into a vibrant new public park-like amenity and private learning campus home for Northeastern University. In crafting the landscape design and planting approach for the project, embracing the region's unique ecology is of paramount importance. Our vision seeks not only to create a functional and visually appealing environment but to honor Maine's natural heritage by utilizing native species endemic to the state.

We understand that the City of Portland has expressed concern over the planting of Maple trees due to susceptibility to Asian Longhorn Beetle (ALB) and current overplanting of Maple trees throughout the City. In order to combat this risk while encouraging species diversity on the campus, the applicant proposes to establish and execute a thorough ALB testing and monitoring program utilizing trained professionals to ensure the long-term health of all trees on the campus.

The landscape and planting design narrative is organized into five distinctive categories: Coastal Edge, Coastal Upland, Scrub Barrens, Upland Meadow, and Stormwater Meadow, as shown in the figure below.

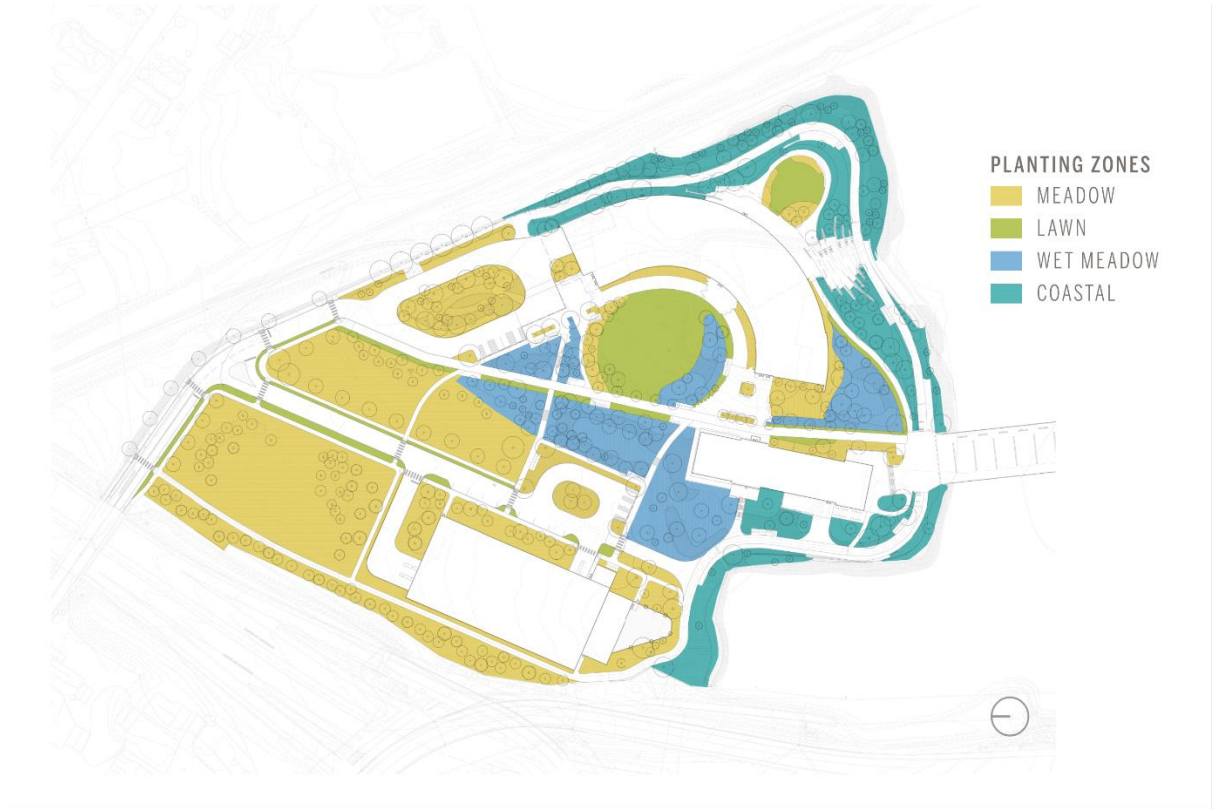


Figure 3-14: Planting Zone Plan

Coastal Edge: A Buffer of Resilience

The Coastal Edge serves as the frontline in the landscape strategy, acting as a resilient buffer against coastal erosion while showcasing the natural beauty of the area. An array of native coastal species, including beach plum, and seaside goldenrod, create a biodiverse buffer zone. These species are specifically chosen for their resilience to salt spray and ability to stabilize the shoreline.

Coastal Upland: A Treasured Oasis

The Coastal Upland represents an oasis for native flora and fauna, offering opportunities for exploration and contemplation while preserving the area's natural character. The Coastal Upland will be populated with native woodland species such as red maple, eastern white pine, and shadbush. These trees not only provide habitat for local wildlife but also offer shade and serenity for visitors. To further support biodiversity, this landscape will encourage nesting areas for ground-nesting birds like American Woodcock, ensuring a thriving community of native wildlife. A thoughtfully designed system of pathways and overlooks will allow residents and students to immerse themselves in the Coastal Upland's beauty while respecting its fragility.

Scrub Barrens: Embracing a Distinctive Ecosystem

The plan acknowledges the ecological significance of Scrub Barrens by preserving and restoring these unique habitats, known for their distinctive plant communities. Certain areas within the Scrub Barrens will be designated as preservation zones, where minimal human intervention will be allowed. These zones will serve as a sanctuary for native scrub barrens flora and fauna. We will initiate restoration efforts using native species like lowbush blueberry, sweet fern, and beach heather to restore natural balance. Interpretive signage will be placed strategically throughout the Scrub Barrens to inform visitors about this unique ecosystem's importance and how our conservation efforts contribute to its preservation.

Upland Meadow: A Haven for Biodiversity

The Upland Meadow is an opportunity to celebrate the beauty and vitality of Maine's coastal landscape while promoting biodiversity and community engagement. A diverse mix of native meadow species, including wild lupine, milkweed, and New England aster, will provide food and habitat for pollinators like monarch butterflies and native bees. This meadow zone will be managed in an ecologically sensitive manner, with periodic mowing and maintenance designed to preserve the meadow character while respecting habitat and ecology.



Figure 3-15: Stormwater Meadow Rendering

Stormwater Meadow: A Sanctuary of Tranquility

The design for the Stormwater Meadow focuses on creating a serene, ecologically rich environment that highlights the beauty of Southeast Maine's ecosystems. The Stormwater Meadow is populated with native draught-tolerant grasses which supports stormwater filtration, conveyance, and water quality improvement.

In conclusion, the landscape design and planting approach for the campus project reflects the project's deep commitment to preserving the state's natural beauty, fostering biodiversity, and creating spaces that educate and inspire. Using native species endemic to Maine can establish an enduring legacy that celebrates the ecological and cultural significance of this remarkable coastal region.

The integration between these ecological regions, the historic Bean Building and the Learning, Research, and Collaboration Building is of great importance as a goal for enhancing indoor/outdoor public space. The Learning, Research, and Collaboration Building has an entrance to an interior public space, known as the Portal, from the waterfront side facing Casco Bay. Another publicly accessible entrance on the upland side of the building, or West elevation, provides access from the Promenade. The Portal may be closed to the public during special events, outside normal operation hours, and when necessary for security or public safety purposes. In all cases the visual connections into and out of the ground floor of the Learning, Research, and Collaboration Building consider views of the special landscape areas, especially the Round, Overlook, Arrival Plaza, and Promenade.

Historic Preservation

The Bean Building is a critical component of the Site, and the site layout including placement of other buildings will allow the Bean building to be a signature feature. The siting of the Learning, Research, and Collaboration Building and the Garage are deferential to historic viewsheds of the Bean Building, especially from Tukey's Bridge/I-295. Plazas and landscape areas are designed to enhance pedestrian connectivity to the Bean Building and maintain this historic structure as a campus focal point.



Figure 3-16: Bean Building Rendering

Campus Cohesion

The project's design team has developed the Site to fit appropriately into the surrounding neighborhood. The position of buildings has been considered in detail to ensure that the campus's layout will support itself while being cohesive with the East Deering neighborhood. The campus will have a sense of completeness in this phase of construction. Areas identified for future development will have well-landscaped lawn and planted spaces that make the campus in its entirety appealing.

Connectivity

The site layout has prioritized the need for bicycle and pedestrian circulation. With parking primarily on one side of the campus, routes for walking and biking from the parking areas or directly from the site entrances have been incorporated into the site layout.

The design for the campus landscape provides a series of social gathering spaces, linked by a carefully orchestrated arrangement of multi-modal circulation. The circulation system has been designed to provide ready access to all parts of the campus. The Shoreline Path is intended to provide access to the water's edge in a variety of ways including, a coastal path for riding and walking parallel to the water, a tiered seating for viewing the water, and a pier allowing users to be over the water with access to seating, viewing, periodic events and water taxi embarkment. The upland circulation network is organized by the central Promenade which has a variety of spur paths that connect the buildings and spaces on the campus. A multimodal loop path occupies the entire perimeter of the Site and connects to the Sherwood Street entrance.

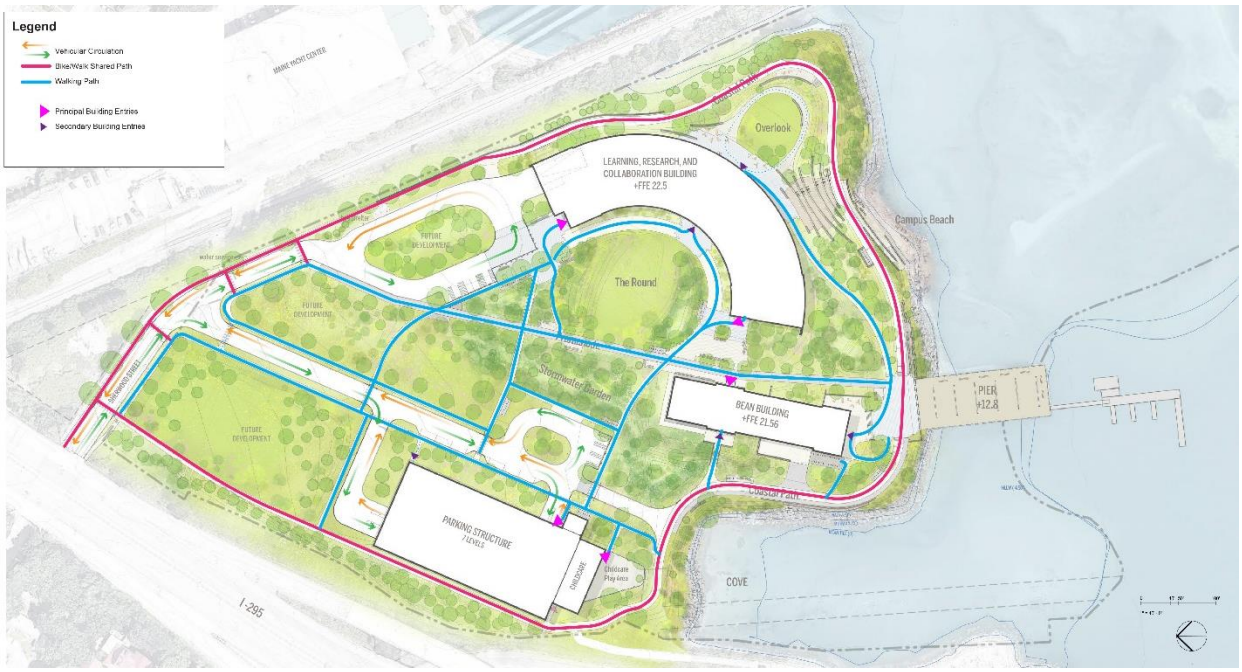


Figure 3-17: Site Circulation Plan

Public Open Space

In Phase 1, the campus contains a minimum of three acres of public open space which is designed to enhance waterfront access and provide bicycle/pedestrian network connectivity. Access to the open space can be provided via a proposed public access easement in the location shown in the figure below. The applicant will work with Corporation Counsel to draft an easement satisfactory to the Applicant and the City, in the event the Planning Board determines that a public access easement is necessary. The public open space functions as recreation areas, social gathering spaces and natural buffers as shown in the figure below.



Figure 3-18: Areas of Public Open Space Plan

Open space is available throughout the campus adjacent to buildings and access routes and at the waterfront. The layout of the Site has considered where open space is needed to support the campus's primary uses. The design of critical site components, like the Site's stormwater management systems, have also included consideration on how to integrate with the public space, adding to it instead of simply working separately for stormwater management.

Sustainable Practice

Northeastern University is reinventing the way universities approach academics. This idea of reinvention will materialize in the design of its new campus, with intent to forge an improved path to climate-responsive regenerative design for the built environment in Maine. Buildings and site development incorporate sustainable technologies in building design, orientation, energy production, and sensitivity to natural resources. A Sustainability and Resilience charter is provided as an appendix and illustrates the commitments the campus is making.

This charter is informed by a combination of industry best practices, Portland's One Climate Future Plan and Northeastern University Standards. The sustainability commitments for the campus fall into the following categories: energy, embodied carbon, responsible materials, water, occupant experience and equity, transportation, and resilience.

Resilience Approach, Sea Level Rise, and Shoreline Protection

The site layout has considered resilience in its design, with building finish floor elevations taking into consideration potential impacts of flooding, severe weather while integrating publicly accessible space within risk mitigation design strategies. While a wide range of risks were analyzed, the Site's waterside location necessitated a unique and careful understanding of present and future risks from sea level rise and coastal storms.

Shoreline protection is primarily improved by the reconstruction of certain sections of the riprap slope and block seawall along the shoreline. This includes providing a better, well-graded armor stone to protect against current and future storms. A section of the existing seawall is also planned to be removed to its foundation and a riprap slope created behind it. This will reduce the current wave reflection and wave energy in these locations. Upland plantings above astronomical high tide will reduce erosion from stormwater runoff. A rebuilt and slightly more elevated pier provides additional improvements to where the existing crumbling Codfish pier currently stands. Work in coastal wetlands and significant wildlife habitats (as defined by the Maine Department of Environmental Protection) will comply with all applicable local, state, and federal permitting requirements.

Portions of the Site are delineated as Special Flood Hazard Areas according to FEMA's Flood Insurance Rate Map (FIRM), attached to this Section. The current and effective FIRMs for Cumberland County, based upon FEMA's 1986 publication, indicate portions of the Site are within the AE Zone, representing 1% annual chance of flooding. Base flood elevations range from 9 to 11 feet along the waterfront.

The design team has performed a comprehensive multi-hazard climate risk and resilience assessment of the proposed campus. The following hazards were assessed for current and future trends, and relevant resilient mitigation strategies were proposed:

- Coastal Flooding and Storm Surge
- Earthquake Ground Shaking
- Liquefaction

- High Winds
- Severe Winter Weather (Snow and Ice)
- Tsunami
- Extreme Precipitation
- Extreme Heat

The design team reviewed existing site survey, site-specific flood hazard risk, and building code requirements, and conducted a technical analysis of flood mitigation options. The new Learning, Research, and Collaboration Building and the existing Bean Building are within the FEMA Special Flood Hazard Area (SFHA) Zone AE with a base flood elevation of 10.79ft City of Portland Vertical Datum (CPVD). To achieve the objective of functional recovery from a coastal flooding scenario for the new Learning, Research, and Collaboration Building, a design flood elevation (DFE) of 22.5ft (CPVD) is implemented which considers the current 100-year storm surge elevation combined with the intermediate sea level rise (SLR) projection for the Site. The finished floor elevation of the new Learning, Research, and Collaboration Building is thus elevated to this elected DFE of 22.5ft. The code compliant DFE of 12.79 ft is implemented at the existing Bean Building. Other buildings on-site, including a new garage and childcare center, are outside of the FEMA SFHA.

The structural design of the Learning, Research, and Collaboration Building is controlled by earthquake loading; thus, the design team performed a probabilistic seismic performance assessment of the current design of the building to draw recommendations for the later stages of the design that ensure an acceptable functional recovery time after a moderate or strong earthquake event.

Building Design

Building façade materials are of high quality, durable to the marine climate and contribute to an attractive public realm. As noted in the IOZ, the first 35 feet of building height shall complement the pedestrian character in materiality, transparency, and detailing.



Figure 3-19: Learning, Research, and Collaboration Building & Round Rendering

Learning, Research, and Collaboration Building Design

Sitting below its upper glass and aluminum "sail," the Learning, Research, and Collaboration Building has a highly articulated lower stone "base" which enriches the 35' high pedestrian zone in a variety of interesting ways. First, the authenticity of natural stone is within reach of pedestrian touch and sightline where scale and material quality can be appreciated at close quarters. The stone is envisioned to be locally sourced and arranged in an alternating open and closed pattern that references the famous crib stone bridge at Bailey Island 14 miles to the east in Casco Bay. Second, this zone of the building contrasts opaque areas of rugged stone with monumental open areas of glazing into the Portal and the principal entrances on the North and West elevations. These areas show off the important social and academic programs within the Learning, Research, and Collaboration Building and invite visitors to participate in the public life inside the building, or simply enjoy the view from the pathway and public space network on the outside.

While above the 35' pedestrian zone, the upper volume of the Learning, Research, and Collaboration Building, referred to as the sail, provides another richly textured visual offering. The facade is composed of alternating glass and copper-toned aluminum panels that change in percentage of glazed and solid in response to views and solar exposure that change at each elevation. The design is directly responsive to environmental conditions in limiting harmful solar glare and admitting desirable solar gain, but the result for the pedestrian is an ever changing experience as one walks along the pathways and promenades. The glass and aluminum curtain wall terminates cleanly at the top of the building and forms an extended parapet that screens all rooftop appurtenances from view. Louvered metal panels in the façade provide side-wall screening for any side-discharging equipment, appearing as an integral part of the building envelope design.

Building rooftop mechanical equipment and appurtenances are incorporated, screened, and set back from roof edges to reduce visual impact from the surrounding neighborhood as described in the figure below.

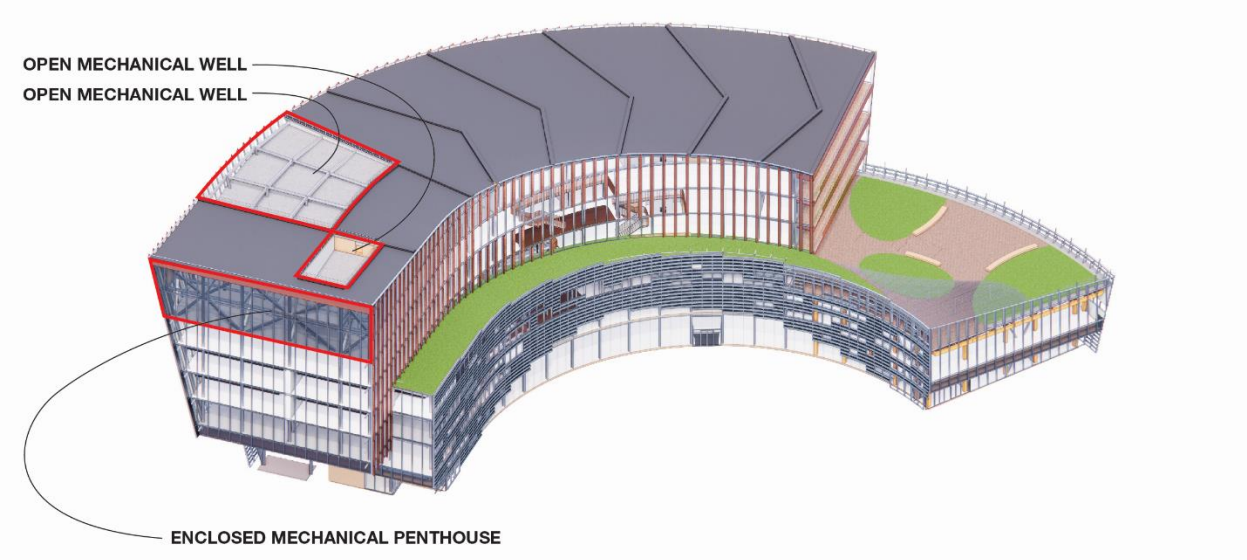


Figure 3-20: Mechanical Screening and Enclosure at Learning, Research, and Collaboration Building

Garage and Childcare Design

While the Garage does not have any rooftop equipment besides an elevator overrun, it nonetheless is wrapped in decorative metal screen on all four elevations. The screen serves to cover all the precast concrete

structural elements of the garage. The garage is planned to include 15,000-sf of photovoltaic canopies at the roof, to provide a source of renewable energy for the campus. It is further punctuated with a series of openings that have a pattern of residential-scaled openings that face the neighborhood as well as the campus, resulting in a thoughtful composition that offers visual interest to highway motorists, neighbors, and campus users.

Garage equipment and mechanical spaces are likewise screened on lower levels with the facade.

The contrast between the programs of childcare and parking is acknowledged in the different façade treatment of the childcare center. Whereas the garage and its vehicles are largely screened from view by a decorative metal façade, the childcare center is a primarily composed of a glass façade facing the principal elevation on the East toward the Round and the arrival, and on the South facing toward the water and adjacent to the protected play space. The openness of the façade allows for occupant daylighting and displays activity from the outside. Appropriate screening and shading will be provided for privacy as needed by the childcare program.



Figure 3-21: Parking Garage Rendering

Building Entrances

Building entrances include prominent facades and are oriented toward, located adjacent to, or accessible from rights-of- way, major pedestrian access routes, or open spaces.

Learning, Research, and Collaboration Building

The Learning, Research, and Collaboration Building has two principal entrances. On the North elevation, the entrance greets visitors arriving from Sherwood Street whether by bike, bus, or automobile with a landscaped Arrival Plaza, and a clearly marked entry vestibule which is protected by a building cantilever which serves as a canopy. At the ground level an integrated paving approach ties the vehicular space and pedestrian space together with common stone paving. Vehicular and pedestrian spaces are separated by

low vehicle bollards. Street trees, low plantings, site, lighting, wayfinding, benches, and bike racks reinforce the entry experience.



Figure 3-22: Arrival Plaza Rendering



Figure 3-23: West Entrance to Learning, Research, and Collaboration Building Plaza & Bean Building Rendering

The West entrance faces the Promenade - the major pedestrian thoroughfare through the campus. This principal entrance consists of a glass vestibule which is also protected by a cantilevered building edge which serves as a canopy. The entry faces a stone plaza which connects to the principal entrance of the Bean Building and is outfitted with benches, low plantings, seating, and lighting.

The Learning, Research, and Collaboration Building has two secondary entrances. The Entrance facing the Round on the Northwest facing elevation gives direct access to the major interior public space known as

the Portal which contains a café, gathering space and restrooms. A glass vestibule serves as the entrance to a small stone paver plaza and beyond that, to the Round.

The South entrance faces the public shore and Casco Bay. Like the Northwest facing entrance, a glass vestibule provides access to the Portal and the amenities described above. The entrance provides access from the interior to a series of important outdoor gathering spaces including the Overlook lawn space, the Bay Terrace tiered seating and several coastal bike and pedestrian paths as well as the Campus Beach.

Bean Building

The principal entrance of the Bean building is sited on the Promenade facing East and directly across from the Learning, Research, and Collaboration Building West entrance.

Garage

The Principal Entrance to the Garage faces East toward the vehicular turnaround and walking path.

Childcare Center

Slightly further to the south but in close proximity to the Garage entrance, the childcare entrance is accessed through a secure playground gate, providing another level of control and buffer to the Campus realm.

Mitigation of Impacts

The buildings and site development are designed to minimize potential negative impacts related to shadows, wind, noise, heat, glare, and lighting; contaminants as described in Section 7.2; and the environment as described in Section 6.

Shadows

Heights and massing of buildings have been designed to minimize shadow impacts to neighbors and avoid negative impacts to existing public open spaces. In general, the buildings step down in deference to the Bean Building and the edges of the Site. To further limit shadow impacts, heights are further restricted at the edge of campus where buildings border other residential uses.

Refer to attached shadow analysis drawings demonstrating shadow impacts at dates prescribed by the City of Portland Technical Manual, section 10 and represented at the times of 9AM, noon and 3PM.

From this analysis it is observed that in nearly all dates/times studied, the new shadows cast by campus buildings largely remain on or within the property line, or on adjacent buffer spaces of the I-295 right of way to the West or the Maine Central Railroad and roof of Maine Yacht Center to the East. It is only in the lowest sun angle scenario of 9AM December 21st that some new shadow from the parking garage reaches residential properties in the East Deering neighborhood. This situation ends by 9:45AM.

Plantings on the property have been chosen for their tolerance to periodic shadow coverage and no adverse effects are anticipated to the growth of vegetation in these spaces. As noted in the wind and heat (thermal comfort) discussion below, some shadows on the north side of the building facing the round have been shown to benefit occupant comfort during the summer.

Noise

The City of Portland Land Use Code Section 6.8.9, Table 6-G, gives maximum permissible sound levels based on the zoning category of an area. For the zones surrounding the project Site, based on the City of Portland Zoning Map the noise limits are as follows:

Table 3-3: Allowable Sound Levels in Zoning Areas

	Daytime/Evening (7 a.m. – 9 p.m.)	Night (9 p.m. – 7 a.m.)
Residential (R3, R5)	55 dBA	55 dBA
Other (IL, C54, B2, B5)	60 dBA	55 dBA

Noise levels due to mechanical equipment, including air source heat pumps, exhaust air handling units, dedicated outside air handing units, fans, and louvers, were calculated and compared to the standards in **Table 3-3**. With this regularly operating equipment, noise at the property lines does not exceed city guidelines. The level is generally within the ambient noise at the Site and would not contribute to significantly raising the ambient level. The existing ambient noise is primarily composed of highway traffic noise and was measured to be 50-55 dBA at the eastern edge of the project Site.

With the current configuration, the noise levels from the smoke exhaust fans or the generator separately do not exceed code levels at the property line. While the fans and generator raise the noise level, they are only used for emergencies and testing.

Wind & Heat (Thermal Comfort)

The design team performed a thermal comfort analysis considering a combination of wind, solar radiation and feel temperature to understand how best to provide a comfortable microclimate. These findings informed the programming of outdoor spaces as well as the planting strategy that can mitigate uncomfortable heat scenarios. The analysis found that in summer months the edges of the Round are generally well-shaded by the buildings, which, along with the calmer winds in the warmer months, will provide a comfortable space for occupants. However, there is more solar exposure further away from the building. This pointed to more active uses along the promenade as well as the lawn areas of the Round. The spaces along the Southern end of the Learning, Research, and Collaboration Building, including the pier, have more solar exposure. This can help counteract the cooler, faster wind speeds coming off the water that may be occasionally experienced in the summer.

Glare

Preventative measures against solar reflected glare are implemented throughout the campus. Specular reflections from concave façades can, in some cases, concentrate reflected solar radiation to produce extreme heat, which can damage skin, foliage, and plastics at the focal point. In order to understand and mitigate these effects, the design team conducted a solar reflected glare study of the Learning, Research, and Collaboration Building to assess the building's glazed areas. Reflected solar irradiance does not exceed 2500 W/m2 (232 W/ft2) at any time during the year on a plane facing the glare source at ground level, except for small portion of the concave west façade of the Learning, Research, and Collaboration Building. This area was found to create a cusp singularity in late afternoons, with potential intensities occurring from April to September. Through simulations, it was determined that mitigation strategies can prevent focusing effects and keep visitors safe and comfortable. At the ground plane where the focusing is most intense, a landscape solution will restrict access to mitigate the glare and heat risk.

Light Pollution and Lighting

The campus lighting designs comply with all safety and comfort requirements and minimize impact to the night sky in accordance with light pollution reduction standards in the most current editions of ANSI/ASHRAE/IESNA 90.1-2007. The goals of the site lighting are to provide a safe nighttime environment, meet all applicable code requirements, support site navigation and wayfinding, enhance the visual coherence of the campus, and avoid light pollution wherever possible.

As defined by the International Dark Sky Association, together with the Illuminating Engineering Society, the site lighting design will take into consideration the Five Principles for Responsible Outdoor Lighting:

- Useful: All light shall have a clear purpose
- Targeted: Light shall be directed only to where needed
- Low Light Levels: Light shall be no brighter than necessary
- Controlled: Light shall be used only when it is useful
- Color: Use warmer color lights where possible

The site lighting will not exceed the luminaire backlight and glare ratings BUG rating method, as defined in IES TM-15-11, to avoid light trespassing to nearby properties and to avoid upward light into the night sky.

The design intent for the Correlated Color Temperature (CCT) is to respect the light pollution principal "color" of using a warm color temperature. The site lighting across the campus shall be 3000K. Refer to attached site lighting plan, photometrics and cutsheets.

Bird Conservancy

Bird safety design will be implemented in the project. Design of exterior building envelopes will be developed in conjunction with the American Bird Conservancy and Cornell Ornithology Lab standards to mitigate bird strikes to the extent practicable. The project also complies with the Bird Friendly Materials Bill, which defines materials with a maximum threat factor of 25 or below as being “bird friendly” and mandates that these must be used on 90% of a façade up mandates above grade. Non-bird friendly materials are limited to 10 ft^2 within any 100 ft^2 area within this region. This provision applies to both new buildings and renovations of existing buildings when the façade is being replaced.

The façade design employs the following bird friendly design strategies:

- Differentiating between texture, color and opacity to fragment reflections and reduce transparency.
- Utilizing surface treatments, etching, fritting, UV patterning or opaque patterned glass to reduce transparency.
- Using glass with external reflectivity below 15%.
- Using interior shades and occupancy sensors to minimize internal illumination which would be visible and attractive to birds.

3.3.8 Neighborhood Integration (8.5.7.I)

Northeastern University and IDEALS have maintained regular contact with neighbors before and following the IDP and IOZ approval, through informal channels such as personal meetings, site visits, calls, and emails,

and through formal channels including Neighborhood Forums and the formation of the Community Advisory Group (CAG). Through all of these channels, neighbors and interested parties have been engaged through regular communication where their views and suggestions have been solicited. Sam Reiche is serving as the community contact for IDEALS and Margaret Angell for Northeastern University, with additional resources from their respective institutions.

IDEALS and Northeastern hold Neighborhood Forums at least quarterly (throughout 2023, the forums have been held to bi-monthly). These forums are held in the community center in East Deering and are open to any neighbor or interested individual. At these meetings, the university and development team provide updates on the operations of the Institute and the progress with the development.

In October, Northeastern launched the CAG to establish a group for the regular discussion of how to maximize the positive social and economic impact of the Institute. In addition, the CAG will draw on the experience of its members to work through challenges and opportunities presented by the development of the new campus. The open sharing of information and perspectives is intended to foster constructive problem-solving and build community around the new Roux Campus.

The CAG is comprised of representatives from key stakeholder groups from across the city. This will be a dynamic group, with membership from the following constituencies, listed below.

- Bicycle and pedestrian
- Business community
- Education
- Higher education
- Neighborhood
- East Deering neighborhood
- East Deering Neighborhood for Responsible Development
- Front Street area neighborhood
- Friends of Payson Park
- Portland Housing Authority Washington Gardens
- Portland Housing Authority Front Street
- Portland Harbor
- Portland Public School System
- Presumpscot School
- Public Transit
- Rail
- Recreation, parks, and trails
- Sustainability
- Transportation

Although a few seats have proved challenging to fill, the response from these groups has been positive and enthusiastic about the opportunity to participate. The CAG held its first meeting in October and will hold meetings quarterly going forward.

Given the long-term role of the CAG, the first task will be to develop a Charter to outline the terms of engagement, including purpose, work scope and structure. As plans unfold for the Roux Campus, and its doors are opened, the CAG will be instrumental in helping to capitalize on the opportunities for Portland.

A detailed project-specific Construction Management Plan (CMP) was developed for Phase 1 and uploaded under separate cover. The CMP was developed based on the following principles outlined in the IDP:

- Open and transparent communication
- One-on-one conversations whenever possible
- Multiple channels to give and receive information
- Timely sharing of plans and considerations
- Receptivity and response to input
- Respect for affected parties

Northeastern University and IDEALS are committed to communicating early and often with neighbors and interested parties. Existing communication platforms: in-person meetings and calls; website; www.rouxcampusportland.org; and Neighborhood Forums will be supplemented with an interactive website and dedicated construction webpage, and a hotline to ensure the public has easy access to timely and accurate information.

3.3.9 Historic Preservation (8.5.7.J)

As previously noted in Section 2.2.2, Bean Building has been designated as a local historic landmark and exterior renovations require Historic Preservation Board review. It should be noted that the Bean Building is exempt from Subsection 14.6.4(E)(2) for review of development within 100 feet of a landmark.

Phase 1 also includes development of a new pier on the footprint of the former Codfish Building pier. Per Section 8.5.7.J.2., the new pier shall include interpretive elements that convey the history and significance of the Codfish Building on top of or within the surface of the pier. While Historic Preservation Board review is not required for demolition of the Codfish Building or construction of the new pier, review and approval of these interpretive elements is required and will be submitted to the Board for review. A summary of the approach is provided below. Additional information regarding Historic Preservation is included in Section 8.5.

The commemoration of the history and significance of the Codfish Building consists of a sequence of connected elements that give visitors multiple perspectives on the building in the context of the site. Moving beyond a single plaque, a whole commemorative pathway leverages the public spaces around the Codfish Building at the pier principally, but also spreading to adjacent plazas and the Promenade to tell a more holistic, comprehensive story of the Building.

The following interpretive elements are envisioned, as shown on **Figure 3-24:**

1. **Railroad Track & Cart Stop** are historic rails and railroad elements that are flush to grade and level to adjacent paving where they are part of the pedestrian surface. Tracks and the cart stop may be exposed in areas of planting or emerging from the hillside slope safely away from pedestrian circulation zones but easily visible.

2. **Bean Pots & Retort Baskets** are repurposed pieces of historic equipment from inside the Bean Building. These ae connected to the industrial process of the Codfish Building and the entire site and will be in lower pier plaza and have a potential reuse as fire pit, table, or seasonal planter. The pots and baskets will be on fixed or lockable casters to remain safely in an intended location.

3. **Granite Interpretive Post** is in Pier Plaza. It will be made of salvaged granite stone from the existing shoreline and repurposed as an interpretive marker with an overall map of the path and the historic elements and commemorative messaging.

4. **Mooring Bollards & Cleats** are salvaged dockside elements from the former pier and will be reused as traffic calming devices separating pedestrian areas from bicycle areas where visitors can safely touch and interact with the artifacts. Bollards and cleats will not be used for current marine service functions.

5. **Pier Decking Inlays** will occur as commemorative metal strips arranged between the light poles to match the Codfish Building footprint and structural system. The strips contain flush text or graphics conveying the Codfish Building's history.

6. **Pier Light Poles** will be arranged in a layout to match the Codfish Building's footprint and structural system. Small interpretive panels at eye level are mounted to poles and provide commemorate signage for the Codfish Building.

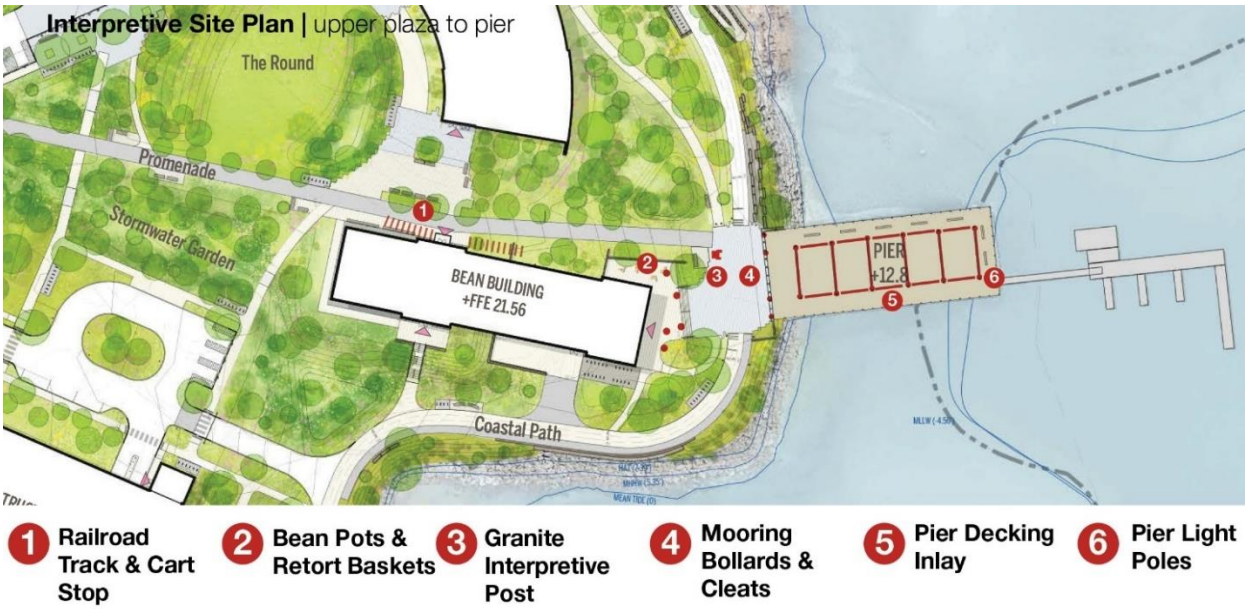


Figure 3-24: Codfish Building Interpretive Elements

3.4 Inclusionary Zoning

The project is required to comply with the City of Portland's Inclusionary Zoning requirements for each phase of development. The Inclusionary Zoning requirements include providing 25% workforce housing for residential developments with 10 or more units, and one low-income rental unit for every 28 hotel rooms. The proposed Phase 1 development does not include residential or hotel units; therefore, this standard is not applicable.

3.5 Waiver Requests

We are requesting the following waivers as a part of the Site Plan process.

- Stormwater Flooding Standard – Per MaineDEP Chapter 500 Stormwater Standards Section 4.F(3), a project is eligible for a waiver from the Flooding Standard if it discharges to a coastal wetland or a major river segment. As described in our Stormwater Management report, the Site discharges directly to Casco Bay, part of a tidal body of water, via the outfall discharge.

- Parking Lot and Parking Space Design – Per City of Portland Technical Manual Section 1.10, standard parking spaces shall be 9 feet by 18 feet. We respectfully request approval of spaces in the parking garage as dimensioned on the plans, which have been designed per industry standards for parking space and drive aisle dimensions. Standard spaces in the parking garage will be 8′-6″x18′-0″ and the 33 compact spaces will be 8′-6″x16′-0″. All parking spaces and aisles exterior to the parking garage meet City standards.
- Sidewalk Material – Per City of Portland Technical Manual Appendix A, the sidewalk and driveway apron material standard for Sherwood Street is asphalt. We respectfully request a waiver of this requirement to utilize concrete as the sidewalk material for Sherwood Street. The existing sidewalk on Veranda Street from the intersection with Sherwood Street is currently concrete. We are also planning to utilize concrete sidewalk within the project Site. The use of concrete for the sidewalk on Sherwood Street will provide consistency with adjacent off-site and on-site sidewalks.

3.6 Evidence of Financial Capability

We have included a copy of a letter verifying the Applicant's financial capacity to undertake the project.

3.7 Evidence of Technical Capacity

The project team includes the following partners completing various engineering, landscape architecture, and architectural components of the project. The project team is also supported by a number of other professional firms providing support with survey, structural design, geotechnical design, mechanical/electrical/plumbing design, and other disciplines. Copies of resumes and information on other members of the project team can be provided upon request.

- **Woodard & Curran (W&C)**, a 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.
- **Stephen Stimson Associates**, STIMSON is a landscape architecture firm based in Cambridge and Princeton, Massachusetts and is comprised of an urban and rural landscape architecture studio, a working farm, and a plant nursery. STIMSON is a female, minority led partnership between Lauren and Stephen Stimson with 30 staff and 5 principals. The studio was conceived in 1992 by Stephen Stimson, who was born on a 10th generation dairy farm in New England. A devotion to craft, and a simple, agrarian-minded approach to design is the mainstay of the firm's work.
- **Cambridge Seven Associates (C7),** is an architecture firm based in Cambridge, Massachusetts, with a staff of 60 people, including registered architects, planners, LEED Accredited Professionals, exhibit, and graphic designers. Since 1962, they have provided clients with provocative yet sensitive designs by recognizing and acting upon the unique opportunities inherent in every project. C7 has received dozens of awards, including the prestigious National AIA Firm Award, and is internationally acclaimed for its innovative work in architecture, urban design, transportation, planning, graphic design, exhibition, and interiors.

- **Bruner/Cott Architects,** is a 35-person historic preservation architecture firm located in Boston, Massachusetts. Their leadership team brings a broad, integrated perspective to design, giving depth to each of their practice areas. Bruner/Cott's work has been recognized for award-winning design from preservation to adaptive reuse and new construction, with a focus on educational and cultural institutions. Bruner/Cott partners with private developers for residential and commercial buildings. Bruner/Cott is known for creativity in inventing new solutions to complex programs and as design leaders for historic renewal and contemporary design in the context of urban revitalization and institutional re-invention.

3.8 Section Attachments

- FEMA Map
- Financial Capacity Letter

3.9 Attachments Provided as Separate Files

The following materials referenced in this section of the report have been uploaded under separate cover for review.

3.9.1 Drawings

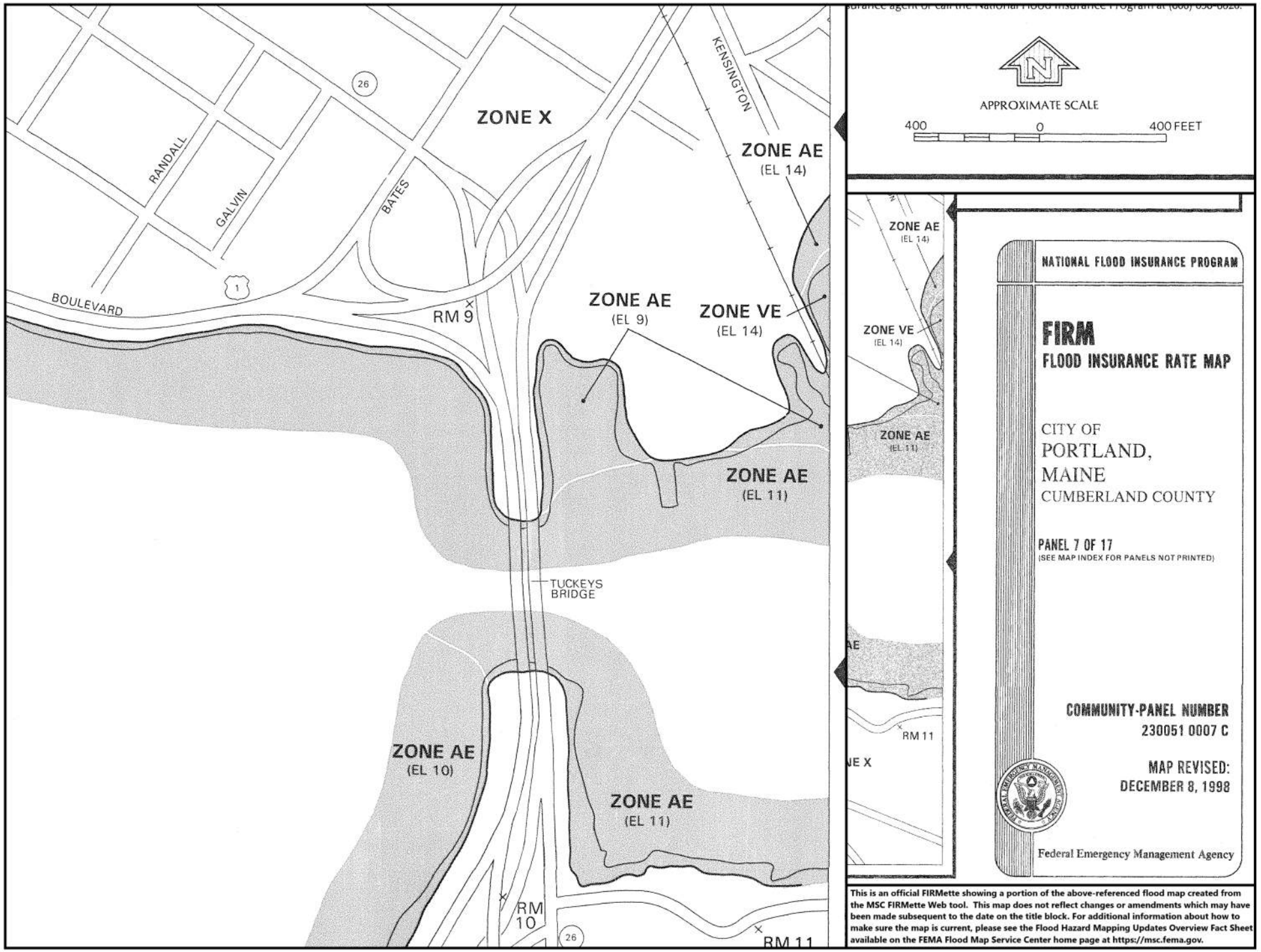
- Average Grade and Building Height Diagrams
- Boundary & Topographic Surveys
- Civil, Landscape, & Architecture Design Plans
- Site Lighting and Photometrics Plans
- Shadow Study

3.9.2 Documents

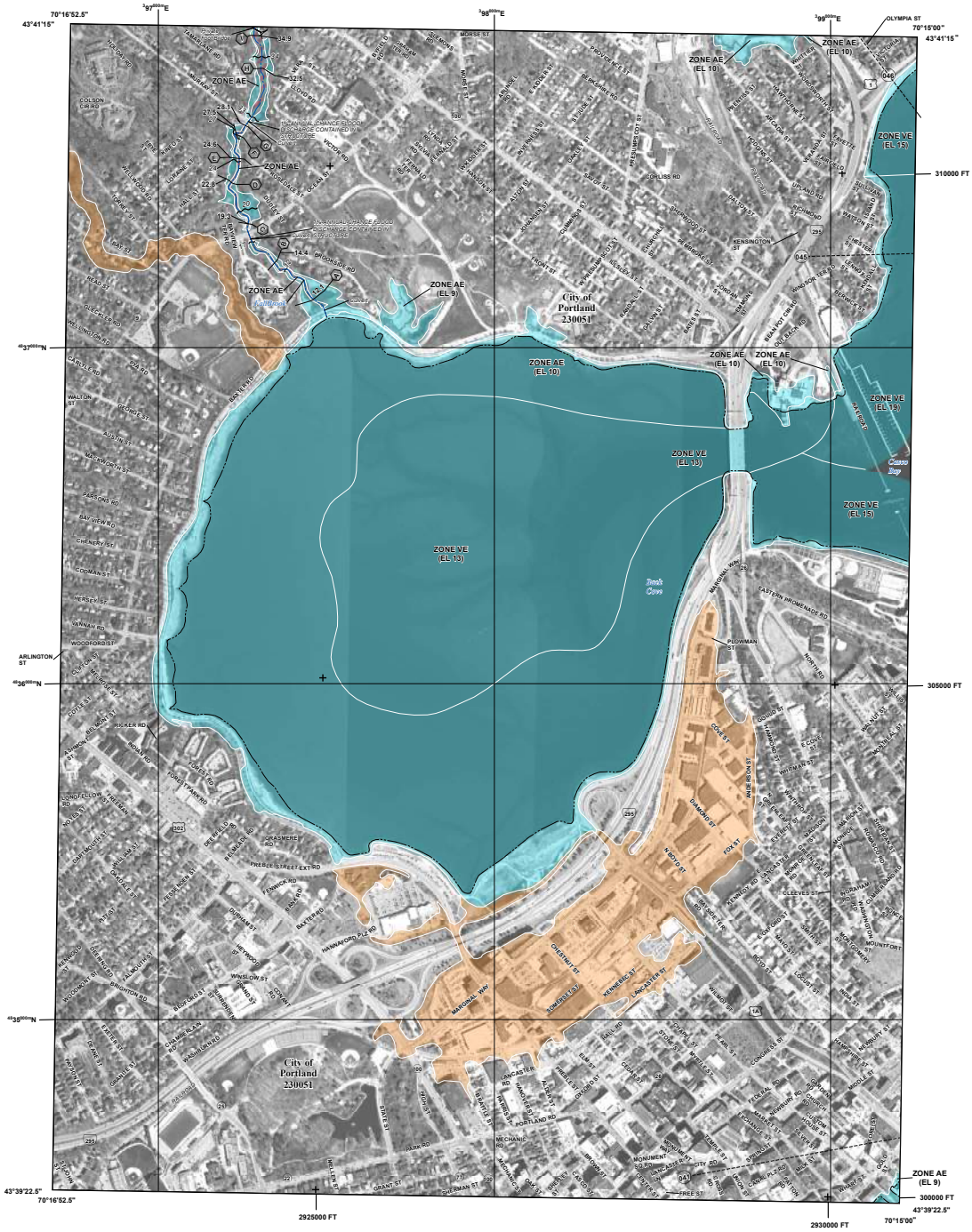
- Application Checklist
- Zoning Assessment Table
- Waiver Table
- Campus Sustainability Charter

3.9.3 Construction Management Plan

A draft Construction Management Plan has been prepared for the proposed development. It should be noted that the constructability of future phases of development has been considered.



This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) *Zone A,V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS

- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM provided in digital format by State of Maine, Maine office of GIS (MeGIS). This information was derived from MeGIS, dated 2012.

The map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and FDTs may reflect stream channel distances that differ from what is shown on the map.

SCALE

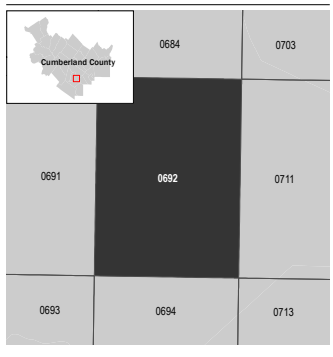
Map Projection:
NAD 1983 UTM Zone 19N;
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

CUMBERLAND COUNTY, MAINE

All Jurisdictions

PANEL 0692 OF 0837

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
PORTLAND, CITY OF	230051	0692	F

REVISED PRELIMINARY 4/14/2017

VERSION NUMBER 2.3.2.1

MAP NUMBER 23005C0692F

EFFECTIVE DATE

Northeastern

October 25, 2023

Ms. Denise Cameron
Woodard and Curran
12 Mountfort Street
Portland, ME. 04101

Dear Ms. Cameron:

Northeastern University expects phase 1 of the Roux Campus project to cost approximately $470 million dollars.

To fund the project, the University will use a mix of philanthropic resources (the majority of which are already pledged) and debt.

Thank you.

Sincerely,

Thomas Nedell
Senior Vice President for Finance and Treasurer

Office of the Senior Vice President Finance

177 Huntington Ave.
360 Huntington Ave.
Boston, MA 02115

617.373.2240
fax 617.373.4728

finance.northeastern.edu

Portland, Maine Yes. Life's good here.

Planning & Urban Development Department

ZONING ANALYSIS Relevant Zone(s) B5

See narrative for dimensional analysis related to Shoreland Overlay Zone and Institutional Overlay Zone

All Projects:

	Required	Proposed	
Lot Size	NA		
Area Per Dwelling Unit	NA		
Minimum Street Frontage	NA		
Front Yard Minimum	NA		
Front Yard Maximum	NA		
Rear Yard	NA		
Yard Right	NA		
Yard Left	NA		
Side Street Setback	NA		
Step Back	per IOZ	See Narrative	Section 3
Maximum Lot Coverage	NA		
Minimum Lot Coverage	NA		
Maximum Height	per IOZ	See Narrative	Section 3
Open Space	per IOZ	See Narrative	Section 3
Maximum Impervious Area	NA		
Pavement Setback	NA		
Floor Area Ratio	NA		
Off Street Parking Spaces	NA		
Loading Bays	NA		
Other 1	NA		
Other 2	NA		
Other 3	NA		

Planned Residential Unit Developments (PRUD) Requirements Not Applicable (NA)

	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) Not Applicable (NA)

	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):			

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 1.10 Parking Lot and Parking Space Design	Parking spaces shall meet the following dimensional requirements: Standard parking space: 9 feet wide by 18 feet long, except that low turnover parking spaces, such as those used by residents or employees, may be designed with a width of 8', 6" and considered a	Requesting approval of spaces within the parking garage as dimensioned on the plans sized at 8'6" width	The parking garage has been designed in accordance with industry standards for parking space and drive aisle dimensions. The parking lot dimensions prescribed in the Technical Standards are not efficient when laying out structured parking
City of Portland Technical Manual Section 5 - Stormwater Management Standards and Maine DEP Chapter 500 Stormwater Management Section IV.	...provide the following submission items...Flooding Standard: Subcatchment plans with flow paths, full hydrology computations/model output of pre- and post-development conditions, summary of pre- and post-development flow rates, and a written request	Requesting approval of a waiver of the Flooding Standard	As described in our Stormwater Management report, our site discharges directly to Casco Bay, part of a tidal body of water, via the outfall discharge.
City of Portland Technical Manual Appendix 1 Sidewalk Materials Policy	Per the Materials Policy map in Appendix 1, the sidewalk material standard for Sherwood street is asphalt	Requesting a waiver of the material policy for Sherwood Street to allow for use of concrete instead of asphalt.	Sherwood Street provides a connection from Veranda Street to the project site. Existing sidewalks on Veranda Street and proposed sidewalks in the site are both made of concrete. Concrete on Sherwood Street would provide for a continuous

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 1.10 Parking Lot and Parking Space Design	Parking spaces shall meet the following dimensional requirements: Standard parking space: 9 feet wide by 18 feet long, except that low turnover parking spaces, such as those used by residents or employees, may be designed with a width of 8', 6" ... and considered a	Requesting approval of spaces within the parking garage as dimensioned on the plans sized at 8'6" width	The parking garage has been designed in accordance with industry standards for parking space and drive aisle dimensions. The parking lot dimensions prescribed in the Technical Standards are not efficient when laying out structured parking
City of Portland Technical Manual Section 5 - Stormwater Management Standards and Maine DEP Chapter 500 Stormwater Management Section IV.	...provide the following submission items...Flooding Standard: Subcatchment plans with flow paths, full hydrology computations/model output of pre- and post-development conditions, summary of pre- and post-development flowrates, and a written request	Requesting approval of a waiver of the Flooding Standard	As described in our Stormwater Management report, our site discharges directly to Casco Bay, part of a tidal body of water, via the outfall discharge.
City of Portland Technical Manual Appendix 1 Sidewalk Materials Policy	Per the Materials Policy map in Appendix 1, the sidewalk material standard for Sherwood street is asphalt	Requesting a waiver of the material policy for Sherwood Street to allow for use of concrete instead of asphalt.	Sherwood Street provides a connection from Veranda Street to the project site. Existing sidewalks on Veranda Street and proposed sidewalks in the site are both made of concrete. Concrete on Sherwood Street would provide for a continuous

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 10 - Municipal Street Lighting Standards - Subsection 10.2 General Standards	For areas not designated with decorative lighting, the City of Portland has adopted the following typical street light pole and fixture standards: Residential (Local/Minor) Street Figure X-1	We respectfully request a waiver to utilize light poles located within the project property line to illuminate the Sherwood Street that are consistent with the project light poles specification in lieu of the city standard X-series light types within the city.	The use of light poles that are consistent with the project site will provide uniform appearance and performance of lighting while also complying with requirements for Sherwood Street illumination per Chapter 10. This will enhance the safety and
City of Portland Technical Manual Section 12 - Site Lighting Standards - Subsection 12.3.2 Illumination Levels	Illumination Levels: Minimum, Maximum, and Average illumination levels for areas intended to be lighted, as measured at grade, shall be: Average 1.25 foot candles (fc)	We respectfully request a waiver to provide 1.16 foot candles (fc) average design value for the project site at the ground plane. The site is very large and meeting an exact value of 1.25 is not possible.	The design value for the average illumination in foot candles will not be perceptibly different to the human eye, and otherwise complies with requirements for maximum, minimum, and uniformity requirements.
City of Portland Technical Manual Section 12 - Site Lighting Standards - Subsection 12.3.3 Lumens	Lumens: Types of Lighting: Path lighting Maximum Lumens Allowed: 1,500 lumens	We respectfully request a waiver to provide lighting along pathways for the project with a maximum lumen output of 5439 lumens. The E01 series poles are used along pathways, and have been specified to be similar in height and lumen	Many of the pathways within the site provide mixed-use of pedestrians and cyclists, with a high level of nighttime use. The mixed-use nature of these pathways, as well as the proximity to waterfront area warrant a level of illumination

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 12 - Site Lighting Standards - Subsection 12.3.2 Illumination Levels	Illumination Levels: Minimum, Maximum, and Average illumination levels for areas intended to be lighted, as measured at grade, shall be: Parking Lot - Surface Average: 0.5 Foot candles	We respectfully request a waiver to consider the limited parking spaces as part of the comprehensive site illumination requirements in lieu of the specific value for the average 0.5 Foot candles in this table. The small number of parking spaces are in close proximity to	Designing the limited parking spaces to be uniformly illuminated within the context of the site will provide an enhanced level of safety and improved visual perception at night. The design value for the average illumination in foot candles will be consistent with

ARUP

60 State Street
Boston, MA 02109
USA

t +1 617 864 2987

arup.com

By email
March 25, 2024

Zach Powell, AICP
Senior Planner
Planning & Urban Development Department
389 Congress Street
Portland, Maine 04101
zpowell@portlandmaine.gov

Your ref PL-002724-2023
Our ref 286522/jw

Dear Zach:

The Roux Institute at Northeastern University

Waiver Requests for Technical Manual Section 10 and Section 12

We are requesting the following waivers as a part of the Site Plan process:

- City of Portland Technical Manual Section 10 - Subsection 10.2 General Standards: Typical street light pole and fixture standards.
  - We respectfully request a waiver to utilize light poles located within the project property line to illuminate the Sherwood Street that are consistent with the project light poles specification in lieu of the city standard X-series light types within the city right-of-way. Illumination of Sherwood Street will comply with illumination and pole spacing requirements as outlined in Table 10.2.1.
    - Justification: The use of light poles that are consistent with the project site will provide uniform appearance and performance of lighting while also complying with requirements for Sherwood Street illumination per Chapter 10. This will enhance the safety and nighttime visual experience for visitors to the project.
- City of Portland Technical Manual Section 12 - Subsection 12.3.2 Illumination Levels: Average 1.25 foot candles (fc)
  - We respectfully request a waiver to provide 1.16 foot candles (fc) average design value for the project site at the ground plane. The site is very large and meeting an exact value of 1.25 is not possible.
    - Justification: The design value for the average illumination in foot candles will not be perceptibly different to the human eye, and otherwise complies with requirements for maximum, minimum, and uniformity requirements.

- City of Portland Technical Manual Section 12 - Subsection 12.3.3 Lumens:
  Path lighting 1,500 lumens
  - We respectfully request a waiver to provide lighting along pathways for the project with a maximum lumen output of 5439 lumens. The E01 series poles are used along pathways, and have been specified to be similar in height and lumen output as the X-8B City Standard used along Trails/Waterfront (Commercial/Thames Street).
    - Justification: Many of the pathways within the site provide mixed-use of pedestrians and cyclists, with a high level of nighttime use. The mixed-use nature of these pathways, as well as the proximity to waterfront area warrant a level of illumination consistent with the Trails/Waterfront areas, to support a safe nighttime environment. Additionally, many pathways must comply with 1.0 foot candle minimum per the Exit Discharge requirements of the 2021 Edition of NFPA 101, Life Safety Code (LSC), as part of an equivalency approach per Section 1.4 in lieu of the current City of Portland Municipal Code Ch. 10 Fire Prevention and Protection.
- City of Portland Technical Manual Section 12 - Subsection 12.3.2 Illumination Levels:
  Parking Lot Surface Average: 0.5 Foot candles
  - We respectfully request a waiver to consider the limited parking spaces as part of the comprehensive site illumination requirements in lieu of the specific value for the average 0.5 Foot candles in this table. The small number of parking spaces are in close proximity to adjacent exit discharge pathways and/or drive-aisles for vehicles and mixed-use pedestrian/cyclist pathways. The adjacent uses to the small number of parking spots make it not possible to comply with the stated average.
    - Justification: Designing the limited parking spaces to be uniformly illuminated within the context of the site will provide an enhanced level of safety and improved visual perception at night. The design value for the average illumination in foot candles will be consistent with adjacent areas, and not be perceptibly different to the human eye, and comply with requirements for maximum, minimum, and uniformity requirements.

ARUP

Our ref	286522/jw
Date	March 25, 2024

Yours sincerely



Jake Wayne
Associate

d 6173499256
m 4158520628
e jake.wayne@arup.com

cc Patti Intrieri pintrieri@cambridgeseven.com
Denise Cameron dcameron@woodardcurran.com

4. EVIDENCE OF RIGHT, TITLE & INTEREST

4.1 Right, Title & Interest

The Project will occur on parcels of land identified by the City as Map 447 Lot A001 and Lot A002 and owned by IDEALS. IDEALS is in the process of transferring ownership of the parcel to Northeastern University, as documented by the Purchase and Sale Agreement attached to this Section. Conveyance of the property to Northeastern University will occur subsequent to Site Plan approval and prior to application for a building permit. A copy of the City parcel maps is also attached for reference.

4.2 Easements & Other Burdens

Existing easement's locations and descriptions are reflected on the survey drawings, uploaded under separate cover.

4.3 Section Attachments

- Purchase and Sale Agreement
- City Parcel Maps

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EXECUTION VERSION

AGREEMENT FOR THE PURCHASE AND SALE OF REAL ESTATE

THIS AGREEMENT is effective as of October 23, 2023 by and between **NORTHEASTERN UNIVERSITY**, a Massachusetts non-profit corporation with an address of 360 Huntington Avenue, Boston, Massachusetts 02115 ("Buyer"), and **THE INITIATIVE FOR DIGITAL ENGINEERING AND LIFE SCIENCES**, a Maine non-profit corporation with an address of 100 Commercial Street, Portland, Maine 04101 ("Seller").

RECITALS

WHEREAS, in furtherance and fulfillment of that certain Memorandum of Understanding, dated July 27, 2022 by and between Buyer and Seller (the "MOU"), the Seller desires to sell, transfer and convey to Buyer a certain parcel of land, together with the improvements thereon, located on the easterly side of Interstate 295 and the southerly side of Sherwood Street in the City of Portland, County of Cumberland and State of Maine (the "Campus") as more specifically described herein; and

WHEREAS, the MOU and further agreements by and among Buyer, Seller, and David and Barbara Roux (the "Rouxs") envision that Buyer will develop the Campus for the creation of a graduate institute (the "Institute"):

- instructing students in the fields of artificial intelligence, digital science, data visualization, computational medicine, genomics and life sciences and project management, and develop content and pedagogy therefor,
- conducting research in the fields described above, among others, and
- encouraging innovation and entrepreneurialism among new and established companies deploying the above-mentioned skills and technologies,

WHEREAS, the buyer has agreed to develop the Campus as the permanent home of the Institute with other supporting infrastructure to encourage learning, collaboration, innovation and other progress, and

WHEREAS, it is the intent of the Seller and the Rouxs that the Campus will, over time, become a force for education, research, collaboration and entrepreneurialism meaningful to the 21st century economy, innovation and job creation.

WITNESSETH AS FOLLOWS:

1. PURCHASE AND SALE. Seller agrees to sell and Buyer agrees to buy, on the terms and conditions hereinafter set forth, approximately thirteen (13) acres of land and buildings generally situated at 1 Bean Pot Circle, Portland, Maine together with all improvements that may at the time of closing be thereon (except as specified below) and all rights and easements appurtenant thereto, which parcel is more particularly bounded and referenced by the City of Portland Assessor's Office as Map 447-A-001-001 and 447-A-001-002 and as more fully described on **Exhibit A** attached hereto, being the same premises described in a Quitclaim Deed

DocuSign Envelope ID: 93BEB8D2-0DE3-4F1B-A064-562E6257362F

with Covenant from B&G Foods North America, Inc. to Seller, dated March 23, 2022 and recorded in the Cumberland County Registry of Deeds in Book 39282, Page 151 together with and including all abutting or adjacent tidal flats, intertidal lands, and related rights in, to and under any submerged lands easements or leases between Seller and/or any predecessor of Seller with the State of Maine (together the "Property"). The following shall also be delivered and conveyed to Buyer at Closing hereunder:

A. Conveyance of tangible personal property, if any via Bill of Sale.

B. Conveyance of intangible personal property, if any, associated with the Property, to the extent owned by Seller, by Bill of Sale and Assignment.

C. Assignment and Assumption of the Maine Yacht Center lease (the "MYC Lease") of a portion of the Property, in form and substance reasonably acceptable to Buyer.

D. Conveyance/Assignment and Assumption of Submerged Land Easement, which requires notice to the Maine State Bureau of Parks and Lands.

E. Assignment and Assumption of the following MDEP Permits if in effect at the time (for which Buyer shall seek MDEP consent):

i. Maine Department of Environmental Protection Air Emission License A-77-71-M-R(SM)

ii. Maine Department of Environmental Protection Maine Pollutant Discharge Elimination System (MDEPDES) Permit #ME0001741

iii. Maine Waste Discharge License (WDL) License #W000980-5R-H-R.

iv. NRPA Permit (*if any, currently in process*)

(collectively, the "MDEP Permits")

F. Assignment and Assumption of the following City of Portland and/or State permits and approvals:

i. Demolition permit

ii. Any site plan approval and/or building or construction permits

iii. MDOT permits including Traffic Movement Permit

iv. any other issued or pending state, municipal or federal permits or permit applications

(collectively, with the MDEP Permits, the "Governmental Permits")

G. Assignment and Assumption of the construction and development contracts and agreements described on **Exhibit B** (the "Development Contracts").

H. Assignment of any and all warranties relating to any completed contracts for construction or demolition of any of the improvements upon the Campus (the "Construction Warranties"), if any.

I. Assignment of any and all studies, reports, engineering, surveys, appraisals, or other such reports or studies, to the extent assignable (collectively, the "Studies and Reports"), and, if and to the extent requested by Buyer, delivery of reliance letters with respect to such Studies and Reports in a form reasonably acceptable to Buyer. Seller agrees to seek consent to such assignments and any required reliance letters from the professionals or vendors providing the Studies and Reports.

2. OFFER AND ACCEPTANCE. The execution of this Agreement by Buyer represents an offer to Seller on the terms and conditions set forth herein. This offer shall be open for acceptance by Seller until 4:00 p.m. Portland, Maine time on October 23, 2023 unless extended by mutual agreement of Buyer and Seller. Seller's acceptance of this offer shall be evidenced by Seller delivering an executed copy of this Agreement to Buyer at the address set forth in Section 14 below on or before the expiration of this offer. If this offer is not accepted by Seller prior to its expiration, this offer shall automatically expire and this Agreement shall be null and void and of no further force and effect.

3. CONSIDERATION. The consideration for the transfer of the Property is in furtherance and fulfillment of the MOU and the performance under such further agreements by and among Buyer and Seller for Buyer's development of the Property as the site of the Institute for the purposes of instructing students, conducting research, and supporting entrepreneurialism in the fields of artificial intelligence, digital science, data visualization, computational medicine, genomics and life sciences and project management, and develop content and pedagogy therefor, and developing the Property to serve as the permanent home of the Institute with other supporting infrastructure. At closing hereunder, however, the parties shall adjust for any pro-rations and any other payments referenced herein. Except as specified in this Agreement or in any other agreement among the parties including the Rouxs, both Buyer and Seller shall bear their own expenses in connection with the performance of their obligations hereunder. Buyer agrees to pay and Seller agrees to accept One Dollar ($1.00) and other valuable consideration as the Purchase Price for the Property.

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[redacted]

4. TITLE. Seller shall convey the Property to Buyer at the closing in fee simple with good, marketable and insurable title, free and clear of liens and encumbrances and other matters of record, except as disclosed in Buyer's Title Insurance Policy # OP 04921177 ME issued by CATIC (the "Title Insurer"), dated March 24, 2022, a copy of which has been provided to Seller (the "Title Policy"). Seller shall deliver the Property free and clear of any leases or occupancies except as otherwise provided herein. Notwithstanding the foregoing, during the period commencing on the date hereof and continuing for a period of thirty (30 days (the "Inspection Period"), Buyer shall have right to review the title and to make any objections to the title in writing to Seller. Upon receipt of Buyer's title objections, Seller shall have a period of up to thirty (30) days to either (i) resolve the title objections to the reasonable satisfaction of Buyer; (ii) or to propose affirmative title insurance coverage addressing any such title objection that the Title Insurer is willing to provide, including an agreement to continue to provide such affirmative coverage to subsequent grantees and mortgagees; or (iii) to refuse to address such title objection, in which case Buyer may elect to terminate this Agreement, or Buyer may elect to close notwithstanding the title objection.

5. CLOSING. The transfer of title and closing hereunder shall take place at the offices of Bernstein, Shur, Sawyer and Nelson, 100 Middle Street, Portland, Maine, no later than ten days prior to Buyer's application for a building permit for the Buyer's initial phase of construction of the Institute is submitted to the City of Portland (the "Closing Date") or at such earlier date and location as Buyer and Seller shall mutually agree in advance and in writing. Buyer shall have the right to request a closing at any time prior to its application for a building permit, provided that Buyer has satisfied the remaining obligations of Buyer under this Agreement, other than such obligations that Seller has agreed to waive in writing. At the closing,

(a) Seller shall execute and/or deliver to Buyer:

i. a Quitclaim Deed with Covenant to the Property, in accordance with the Short Form Deeds Act, 33 M.R.S.A. § 761 et seq., (the "Deed"),

ii. a Quitclaim with Covenant Bill of Sale conveying the personal property to be conveyed to Buyer as set forth in Section 1.A. above;

iii. all keys, access cards, security codes and similar items to the Property in Seller's possession;

iv. the originals of all permits and licenses relating to the Property, if any, in Seller's possession;

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v. such documents, affidavits and certificates as are otherwise required by this Agreement, required by law and/or reasonably necessary for Buyer's acquisition and financing of the Property, including without limitation a Certificate of Non-Foreign Status (as required by Internal Revenue Service regulations), an affidavit regarding underground storage tanks (as required by Maine Law), a surface/subsurface waste disposal system certificate (if applicable), applicable Maine State REW forms and satisfactory evidence of Seller's existence, authority to convey the Property; and

vi. One or more Assignment and Assumption Agreements signed by Seller to assign to Buyer all of Seller's rights in and to the Maine Yacht Center Lease; the Governmental Permits, the Studies and Reports, the Construction Warranties and the Development Contracts; together with any reliance letters with respect to the Studies and Reports requested by Buyer.

(b) Buyer shall execute and/or deliver to Seller:

i. the purchase price;

ii. evidence that the buyer's Board of Trustees has voted affirmatively to proceed with Phase 1 of the Campus development project (the "Project") and has committed sufficient financial resources to fund Phase 1 of the Project which shall include all work reasonably necessary for the construction of one or more learning, research and collaboration buildings and supporting parking and public infrastructure, construction of a new pier, and renovation of the exterior of the existing historic landmarked Bean Building as shall be further described in the initial Site Plan application (as the same shall be jointly submitted by the parties hereto) as approved by the City of Portland (the contents of which – as approved by the City -- shall be referred to herein as "Phase 1"). Such financial resources may be from various sources including bond financing, Buyer's own resources, pledges and other philanthropic giving and such financial resources as may be available to Buyer over the course of the construction of Phase 1 of the Project as opposed to being fully available at the time of closing;

iii. One or more Assignment and Assumption Agreements signed by Buyer to enable Buyer to assume all of Seller's rights in and to the Maine Yacht Center Lease; the Governmental Permits, the Studies and Reports, the Construction Warranties and the Development Contracts; and

iv. such other documents, affidavits and certificates as are otherwise required by this Agreement, required by law and/or reasonably necessary for Seller's disposition of the Property.

Unless this Agreement is extended by mutual agreement of the parties, if the Closing does not occur for any reason by December 31, 2024, then this Agreement shall automatically terminate and be of

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no further force and effect and all obligations of the parties shall cease other than those specifically identified herein as surviving such termination.

6. RISK OF LOSS, DAMAGE AND INSURANCE.

(a) All risk of loss to the Property prior to the closing shall be borne by Seller. Seller shall keep the Property fully insured against fire and other extended coverage risks until the closing and shall name Buyer as an additional insured as Buyer's interest may appear.

(b) In the event that, prior to the closing, the improvements which are part of the Property are destroyed or, in the opinion of Buyer, substantially damaged, Buyer may either (i) terminate this Agreement, or (ii) accept the insurance proceeds payable by reason of such damage or destruction and close this transaction notwithstanding the same. If any part of the Property is damaged by fire or other casualty and Buyer does not elect to terminate this Agreement pursuant to this Section, then Seller and Buyer shall perform their respective obligations under this Agreement and in the event of a closing, Seller shall (x) deliver to Buyer at the Closing any insurance proceeds or condemnation awards received by Seller in respect of or allocable to the Property; and (y) assign to Buyer all of Seller's interest in and to any insurance proceeds and/or condemnation awards allocable to the Property which have not yet been received by Seller on that date; and (z) refrain from accepting or agreeing upon the amount of any payment of any proceeds or awards without Buyer's prior written consent. Notwithstanding the above, Buyer acknowledges that Seller is in the process of abating and demolishing all of the facilities on the site except for the so-called "Cannery" or "Bean Building"

7. INSPECTION/DELIVERY OF DOCUMENTS; AS-IS CONDITION. Reasonably promptly after this Agreement becomes effective, Seller shall deliver to Buyer copies of all of the Studies and Reports in Seller's possession or control to the extent not already provided to Buyer. With reasonable notice which shall be a minimum of three business days, Seller hereby grants Buyer or its agents the right to enter upon or in any part of the Property at all reasonable times and from time to time prior to the closing in order to inspect the Property, conduct surveys, soil tests, engineering and environmental testing and studies and to do such things as are reasonably necessary with respect to its due diligence, acquisition and development of the Property, provided, however, that Buyer's obligations to close hereunder shall not be conditioned upon the results of such due diligence other than as set forth below.

Buyer has commenced its review of the Studies and Reports, including environmental site assessments (ESAs) performed prior to the date hereof and accepts the Property in its as-is condition except as specifically set forth herein. Notwithstanding the foregoing, Seller shall not, after the date hereof, suffer or allow the occurrence of any further event(s) which would create, constitute, or be considered a recognized environmental condition (REC) under any qualified Phase I ESA without prompt and complete remediation or abatement, or else Seller shall be considered in default hereof. Furthermore, if Seller's title to the Property is further encumbered by any matter or means after the date hereof and such further encumbrance is not cleared prior to Closing, Seller shall be in default hereof. The foregoing is not a consent or permission to further encumber the title and Seller specifically agrees it shall not further encumber the title to the Property nor permit any mortgage, lien, claim, or charge to accrue which shall affect Seller's title.

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Further notwithstanding the foregoing, the parties acknowledge that the environmental site assessments conducted by or for Buyer or for which Buyer has been provided were conducted before certain demolition activities on the site that were performed by or for Seller. Buyer shall have the right to conduct further or updated ESAs and to review any remediation activities undertaken by Seller or its agents or contractors since the date of the ESAs conducted by or for Buyer. In the event that such further or updated ESAs reveal any RECs not previously disclosed to Buyer, Buyer shall have the right to terminate this Agreement or to require that further conditions be satisfied by Seller prior to closing.

Except as set forth in this Agreement, the Property will be conveyed "as is" at the time of closing and Seller disclaims all representations and warranties from Seller to Buyer other than any limited representations set forth herein. Buyer will indemnify Seller with respect to any environmental liabilities associated with the Property that may be discovered or arise post-closing, regardless of when the action(s) leading to such liabilities occurred. The foregoing sentence shall survive Closing under this Agreement. Seller will assign any environmental indemnification agreements it obtained from the Seller's grantor to Buyer, if any, with the right of the Buyer to enforce the indemnification obligations contained in any such agreements to the extent permitted therein.

8. CONDITIONS TO BUYER'S OBLIGATIONS TO PERFORM. The Buyer's obligation to perform hereunder and to close on the purchase of the Property are conditional upon the following matters:

(a) Buyer's obligation is conditional upon the Buyer's Board of Trustees approval of the Buyer's acquisition of the Property and the obligations of the Buyer under this Agreement.

(b) Buyer's obligation is conditional upon Buyer's satisfaction with its inspection of the Property during the Inspection Period as more fully set forth in Section 7 of this Agreement.

9. SELLER'S CONTINUATION OF CONSTRUCTION ACTIVITIES PRIOR TO CLOSING. Seller is currently conducting demolition, environmental remediation and site work at the Property. Seller has provided Buyer with copies of all of the plans, specifications, contracts and scope of work being performed by Seller or its agents or contractors at the Property at the time of execution hereof. Seller shall continue to perform such work in accordance with such contracts. To the extent that any such plans, specifications or contracts are modified or supplemented following the execution of this Agreement (the "Construction Modifications"), or to the extent that any additional contracts are to be entered into by Seller prior to the closing (the "New Contracts"), Seller shall endeavor to provide Buyer with notice thereof as soon as practicable, and Buyer shall have the right to comment upon and participate in any discussions regarding the scope and timing of such work; provided, however, that the notice contemplated by this provision shall be deemed satisfied if an agent, employee, or representative of Buyer is present with Seller (whether in person, telephonically, or by email) in conversations, meetings and other communications involving such Construction Modifications or New Contracts. Moreover, notwithstanding the notice provisions set forth in Section 16(b) below, the notice contemplated by this Section 9 may also be made to

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other designated representatives of Buyer involved in the construction activities via telephone in addition to, or in lieu of, any of the other manners of providing notice outlined in Section 9.

10. POSSESSION OF THE PROPERTY. The Property shall be delivered to the Buyer at the time of the closing free and clear of all tenancies or occupancies by any person or entity, unless otherwise agreed herein. The Property shall also be reasonably free and clear of all trash and debris, and free and clear of any and all of Seller's personal property and equipment, except as set forth herein.

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

(a) Seller is duly organized and in good standing under the laws of the State of Maine, with full capacity, power and authority to enter into and fully perform the obligations and transactions contemplated by this Agreement;

(b) The execution and delivery of this Agreement and the performance by Seller of its obligations hereunder are within the lawful power of Seller, have been duly authorized and approved by all necessary actions on behalf of Seller, and will not conflict with, or result in a breach of any of the terms, covenants and provisions of: (i) Seller's Articles of Incorporation or By-Laws; (ii) any judgment, writ, injunction, regulation, ruling, directive or decree of any court of governmental authority; or (iii) any agreement or instrument to which Seller is a party or by which Seller is bound;

(c) The person executing this Agreement on behalf of Seller is duly authorized to do so and to bind Seller to enter into and fully perform the obligations and transactions contemplated by this Agreement;

(d) No consent, approval, order or authorization of any court or other governmental entity is required to be obtained by Seller in connection with the execution and delivery of this Agreement or the performance hereof by Seller;

(e) There are no litigation, liens, judgments, violations, or proceedings pending, or to the best of Seller's knowledge, threatened against or relating to the Property nor does Seller know or have reasonable grounds to know of any basis for any such action, or of any governmental investigation relating to the Property;

(f) There is no pending, or to the best of Seller's knowledge, threatened action or proceeding (including, but not limited to, any condemnation or eminent domain action or proceeding) before any court, governmental agency or arbitrator relating to or arising out of Seller's ownership of the Property or any portion thereof, or which may adversely affect Seller's ability to perform its obligations under this Agreement, or which may affect the Property or any portion thereof;

(g) Seller is not a "foreign person" within the meaning of § 1445 of the Internal Revenue Code;

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(h) To the best of Seller's knowledge, no work has been performed or is in progress at, and no materials have been furnished to the Property or any portion thereof which may give rise to mechanic's, materialmen's or other liens against the Property or any portion thereof except as may arise in connection with Seller's further obligations as specifically contemplated by this Agreement; and

(i) All outstanding bills and/or accounts payable concerning the Property are either paid or will be paid prior to or at the time of closing unless otherwise agreed by the parties in writing.

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

(a) Buyer is duly organized and in good standing under the laws of the Commonwealth of Massachusetts, with full capacity, power and authority to enter into and fully perform the obligations and transactions contemplated by this Agreement;

(b) The execution and delivery of this Agreement and the performance by Buyer of its obligations hereunder are within the lawful power of Buyer, have been duly authorized and approved by all necessary actions on behalf of Buyer, and will not conflict with, or result in a breach of any of the terms, covenants and provisions of: (i) Buyer's Articles of Incorporation or Bylaws; (ii) any judgment, writ, injunction, regulation, ruling, directive or decree of any court of governmental authority; or (iii) any agreement or instrument to which Buyer is a party or by which Buyer is bound;

(c) The person executing this Agreement on behalf of Seller is duly authorized to do so and to bind Seller to enter into and fully perform the obligations and transactions contemplated by this Agreement; and

(d) No consent, approval, order or authorization of any court or other governmental entity is required to be obtained by Buyer in connection with the execution and delivery of this Agreement or the performance hereof by Buyer.

13. DEFAULT AND REMEDIES. In the event that either Buyer or Seller defaults in the performance of its obligations hereunder, the non-defaulting party may elect to terminate this Agreement by written notice, or seek specific performance of the defaulting party's obligations.

14. BROKERAGE. The parties agree that no broker has been involved in this transaction.

15. ADJUSTMENTS, PRORATIONS AND CLOSING COSTS.

(a) Real estate taxes, assessments, rentals, common area maintenance charges, fuel oil, and utilities shall be prorated as of the date of closing based upon amounts thereof actually paid or received (as the case may be) as of this date.

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

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

(d) A portion of the purchase price shall be withheld at the closing by Buyer if required by 36 M.R.S.A. § 5250-A unless Seller furnishes to Buyer an affidavit stating, under penalty of perjury, that Seller is a resident of Maine or that the transfer is otherwise exempt from withholding tax.

16. MISCELLANEOUS.

(a) Time. Time is of the essence of this Agreement.

(b) Notices. Any notices required or permitted to be given under this Agreement shall be sufficient if in writing and if sent: (i) by first class mail, postage prepaid, registered or certified, return receipt requested; (ii) by hand delivery; (iii) by FedEx, or similar overnight express mail service, prepaid; or (iv) electronic mail ("e-mail") or by facsimile ("Fax") transmission, each to the addresses and/or Fax numbers listed below:

TO SELLER:
Charles E. Hewett
IDEALS
100 Commercial Street
Portland, ME 04101
chuck.hewett@ideals.org

WITH A COPY TO:
Helen S. Coburn, Esq.
Bernstein Shur
100 Middle Street, PO Box 9729
Portland, ME 04104-5029
hcoburn@bernsteinshur.com

TO BUYER:
Northeastern University
Planning, Real Estate and Facilities
360 Huntington Avenue, 216-201
Boston, MA 02115
Attention: Kathy Spiegelman
Email: k.spiegelman@northeastern.edu

WITH A COPY TO:
Northeastern University
Office of the General Counsel
360 Huntington Avenue, Suite 301

DocuSign Envelope ID: 93BEB8D2-0DE3-4F1B-A064-562E6257362F

Boston, MA 02115
Attention: Michael Glover
Email: m.glover@northeastern.edu

All such communication shall be deemed made upon the earlier of (3) business days following deposit with the U.S. Mail or the date of receipt as disclosed on the return receipt (if sent by registered or certified mail), or upon delivery (if hand delivered), or upon delivery as indicated on the proof of delivery (if sent via FedEx or similar overnight express mail service), or if sent via email with proof of receipt by the primary addressee, effective upon the day sent if received prior to 3:00 p.m. local time or the next business day if received thereafter. With respect to any of the above-referenced methods of delivery, rejection or other refusal to accept or the inability to deliver because of a change of address of which no notice was given shall be deemed to be receipt of the notice sent. Either party may change its address for purposes of this subparagraph by giving the other party notice of the new address in the manner described herein.

(c) Binding Effect/Assignment. This Agreement shall not become a binding contract until signed by both parties and that fact has been communicated to all parties or their agents. This Agreement will inure to the benefit of and bind the respective heirs, successors, personal representatives and assigns of the parties hereto and may be cancelled, modified or amended only by a writing executed by the parties hereto or their legal representatives.

(d) Construction. This Agreement and the Exhibits hereto set forth the entire agreement between the parties, and there are no other agreements or understandings between them related to the subject matter hereof. As used in this Agreement, the singular number shall include the plural, the plural the singular, and the use of one gender shall be deemed applicable to all genders. This Agreement shall be governed by and construed in accordance with the laws of Maine. All representations, warranties, covenants and indemnities made by either party herein shall survive the closing. If any provision of this Agreement is determined to be invalid or unenforceable, it shall not affect the validity or enforcement of the remaining provisions hereof. In the event of any dispute under this Agreement; prior to any litigation, the parties hereto shall first submit the matter to mediation and shall undertake good faith efforts to resolve any such dispute. In the event that a dispute hereunder is not resolved by mediation, the parties agree to submit any litigation to enforce this Agreement to the jurisdiction of the United States District Court for the District of Maine.

(e) Counterparts/Electronic Signatures. This Agreement may be simultaneously executed in any number of counterparts, each of which when so executed and delivered shall be an original, but such counterparts shall constitute one and the same instrument. This Agreement may be signed electronically and such shall be treated as original signatures.

(f) Attorney's Fees. If any legal action (including without limitation mediation and arbitration) is brought or compelled by either party to enforce any provisions of this Agreement, the prevailing party shall be entitled to recover from the other party its reasonable attorneys' and paralegals' fees and court costs, subject to and limited by the provisions of the Default and Remedies section of this Agreement.

DocuSign Envelope ID: 93BEB8D2-0DE3-4F1B-A064-562E6257362F

(g) Effective Date. The Effective Date of this Agreement shall be deemed to be the date first set forth above in this Agreement, provided that if no date is filled in, the Effective Date shall be the last date of the signature of either Buyer or Seller.

[*Signature Page Follows*]

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IN WITNESS WHEREOF, Seller and Buyer have executed this Agreement under seal as of the dates indicated above.

SELLER

THE INSTITUTE FOR DIGITAL ENGINEERING AND LIFE SCIENCES

DocuSigned by:
Charles E. Hewett
4BD10666DAF9434...

By: Charles E. Hewett
Its: Executive Director
Date: October 23, 2023

BUYER

NORTHEASTERN UNIVERSITY

DocuSigned by:
Thomas E. Nedell
FF682479C14A4DA...

By: Thomas E. Nedell
Its: Senior Vice President & Treasurer
Date: October 23, 2023

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EXHIBIT A
[*Legal Description*]

A certain parcel of land, together with the improvements thereon, located on the easterly sideline of Interstate 295 and the southerly sideline of Sherwood Street in the City of Portland, County of Cumberland and State of Maine being further described as follows:

Beginning at a 6-inch by 6-inch granite monument found inscribed “ECJ #356” marking the southerly sideline of Sherwood Street westerly sideline of the Canadian National Railroad and further described as the most northeasterly corner of described parcel;

THENCE, S 23-36-55 E, along said Railroad 316.33 feet to a 6-inch by 6-inch granite monument found inscribed "ECJ 356";

THENCE, S 23-36-55 E, along said Railroad, 526.90 feet, to a 4-inch by 4-inch granite monument with a drill hole;

THENCE, S 23-36-55 E, along said Railroad, 745 feet, more or less to the low water mark of the Casco Bay,

THENCE, in a general westerly direction along said low water line about 1,685 feet to a point on the easterly sideline of Interstate 295;

THENCE, N 2-23-50 W, along said sideline, 48 feet, more or less to a point;

THENCE, S 87-30-10 W, along said sideline, 30.00 feet to a point;

THENCE, N 2-23-50 W, along said sideline, 61.46 feet to a drill hole found, said drill hole lying on a tie course of S 73-07-39 W, 878.87 feet from the previous mentioned 4-inch by 4-inch granite monument with a drill hole;

THENCE, N 2-23-50 W, along said sideline, 237.87 feet to a 5/8 inch re-bar found capped "ECJ #509";

THENCE, N 89-44-34 E, along said sideline, 1.05 feet to a 5/8 inch re-bar found capped "ECJ #509";

THENCE, N 6-28-53 E, along said sideline, 122.88 feet to a 5/8 inch re-bar found capped "ECJ #509";

THENCE, N 0-24-30 E, along said sideline, 88.91 feet to a 4-inch by 4-inch granite monument found inscribed "ECJ #509";

THENCE, N 24-48-04 E, along said sideline, 60.29 feet to a 6-inch by 6-inch granite highway monument;

THENCE, N 31-29-16 W, along said sideline, 31.96 feet to a 4-inch by 4-inch granite monument inscribed "ECJ #509";

THENCE, N 3-26-49 W, along said sideline, 111.10 feet to a 5/8 inch re-bar found capped "ECJ #509";

THENCE, N 8-40-57 E, along said sideline, 89.05 feet to a 4-inch by 4-inch granite monument inscribed "ECJ #509";

THENCE, N 23-15-05 E, along said sideline, 66.28 feet to a 4-inch by 4-inch granite monument Inscribed "ECJ #509";

THENCE, N 34-47-28 E, along said sideline, 96.68 feet to a 4-inch by 4-inch granite monument inscribed "ECJ #509";

THENCE, N 25-25-29 E, along said sideline, 160.02 feet to a 5/8 inch re-bar found capped "ECJ #509";

THENCE, N 23-37-03 E, along said sideline, 63.03 feet to a 4-inch by 4-inch granite

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monument inscribed "ECJ #509";

THENCE, N 39-23-04 E, along said sideline, 6.72 feet to a 6-inch by 6-inch granite monument found inscribed "ECJ #509";

THENCE, N 55-32-30 W, along said sideline, 11.67 feet to a 4-inch by 4-inch granite monument inscribed "ECJ #509";

THENCE, N 34-47-50 E, along said sideline, 117.04 feet to a 4-inch by 4-inch granite monument inscribed "ECJ #509";

THENCE, N 34-43-38 E, along said sideline, 15.02 feet to a 5/8 inch re-bar found capped "ECJ #509" marking the southerly sideline of Sherwood Street;

THENCE, S 55-12-08 E, along said Sherwood Street, 288.60 feet to the point of beginning.

The foregoing description was prepared based on the Survey prepared by OEST Associates, Inc. dated February, 1999 and last revised February 26, 1999 recorded in in the Cumberland County Registry of Deeds in Plan Book 199, Page 159.

Alternate Legal Description [recent survey; grant to be without covenant of title]:

All right, title and interest in and to the following described lot or parcel of land, together with the buildings and improvements thereon, located in the City of Portland, County of Cumberland, State of Maine, which description is based on a ALTA/NSPS Land Title Survey prepared by VHB, dated June 30, 2021, last revised February 28, 2022, and Seller makes no representations or warranties as to the accuracy of said property description:

Beginning at a granite bound found at the intersection of the southerly sideline of Sherwood Street and the westerly sideline of land now or formerly of the state of Maine as described in the Cumberland County Registry of Deeds in Book 25500, Page 215, and Book 10924, Page 91 being formerly owned by the St. Lawrence & Atlantic Railroad Company, in part, and the Canadian National Railway Company, in part;

THENCE along the westerly sideline of land of the State of Maine South 23°38’41” East for a distance of 316.33 feet to a granite bound found;

THENCE continuing along land of the State of Maine South 23°34’45” East for a distance of 526.95 feet to a granite bound found;

THENCE continuing along the land of the State of Maine South 23°34’45” East for a distance of 745 feet, more or less to the low water mark of Casco Bay,

THENCE in a generally westerly direction along the low water line about 1,720 feet, more or less, to a point in the easterly sideline of Interstate 295;

THENCE along the easterly sideline of Interstate 295 the following courses and distances:

North 2°23’38” West for a distance of 48 feet, more or less to a point;

South 87°36’22” West for a distance of 30.00 feet to a point;

North 2°23’38 West for a distance of 61.46 feet to a point being located South 73°07’57” West at a distance of 878.66 feet from a granite bound found on the westerly sideline of land now or formerly of the State of Maine;

North 2°23’38 West for a distance of 237.87 feet to a point;

North 89°44’46” East for a distance of 1.05 feet to a rebar found;

North 6°29’05” East for a distance of 122.88 feet to a point;

North 0°24’42: East for a distance of 88.91 feet to a granite bound found;

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North 24°48’16 East for a distance of 60.29 feet to a granite bound found;
North 31°29’04” West for a distance of 31.96 feet to a point;
North 3°26’37” West for a distance of 111.10 feet to a point;
North 8°41’09” East for a distance of 89.05 feet to a point;
North 23°15’17” East for a distance of 66.28 feet to point;
North 34°47’40” East for a distance of 96.68 feet to a granite bound found;
North 25°25’41” East for a distance of 160.02 feet to a point;
North 23°37’15” East for a distance of 63.03 feet to a point;
North 39°23’16” East for a distance of 6.72 feet to a point;
North 55°32’18” West for a distance of 11.67 feet to a point;
North 34°48’02” East for a distance of 117.04 feet to a granite bound found;
North 34°43’50” East for a distance of 15.02 feet to a rebar found at the southerly sideline of Sherwood Street;

THENCE departing from the easterly sideline of Interstate 295 and running along the southerly sideline of Sherwood Street South 55°12’19” East for a distance of 288.59 feet to the point of beginning.

Meaning and intending to convey the same premises described in a Quitclaim Deed with Covenant from B&G Foods North America, Inc. to The Initiative for Digital Engineering and Life Sciences dated March 23, 2022 and recorded in the Cumberland County Registry of Deeds in Book 39282, Page 151.

The above described property shall be conveyed subject to the encumbrances listed as items 1-14 on Exhibit A of the Quitclaim Deed with Covenant from The Pillsbury Company to Heritage Acquisition Corp. dated March 15, 1999 and recorded in the Cumberland County Registry of Deeds in Book 14616, at Page 50 and the rights and easements granted by Heritage Acquisition Corp. to Central Maine Power Company and Verizon New England, Inc. by instrument dated February 7, 2006 and recorded in the Cumberland County Registry of Deeds in Book 24049, Page 189.

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EXHIBIT B
[*Development Contracts*]

1. Design Agreement by and between Bruner/Cott and The Initial for Digital Engineering and Life Sciences ("IDEALS") (*in negotiation; near final form*)

2. Design Agreement by and between CambridgeSeven and IDEALS (*in negotiation; near final form)*

3. Construction Management Agreement, by and between IDEALS and Consigli Construction Co., Inc. dated January 17, 2023

4. Cooperative Agreement by and between the Maine DOT ("MDOT") and IDEALS, dated as of January 18, 2023

5. MDOT Temporary Access Road Rights Agreement by and between MDOT and IDEALS, dated as of March 30, 2023

6. License Agreement with the City of Portland Fire Department by and between the City of Portland and IDEALS dated May 24, 2023

7. License Agreement with the City of Portland Fire Department by and between the City of Portland and IDEALS dated August 2, 2022

8. IDEALS Boiler Purchase Agreement by and between IDEALS and Maine Plywood USA, LLC dated June 19, 2023

9. Consultant Services Agreement, by and between IDEALS and MacRostie Historic Advisors

10. Consultant Services Agreement, by and between IDEALS and Thorton Tomasetti

11. Consultant Services Agreement, by and between IDEALS and Tsoi Kobus Design

12. Consultant Services Agreement by and between IDEALS and Vanasse Hangen Brustlin

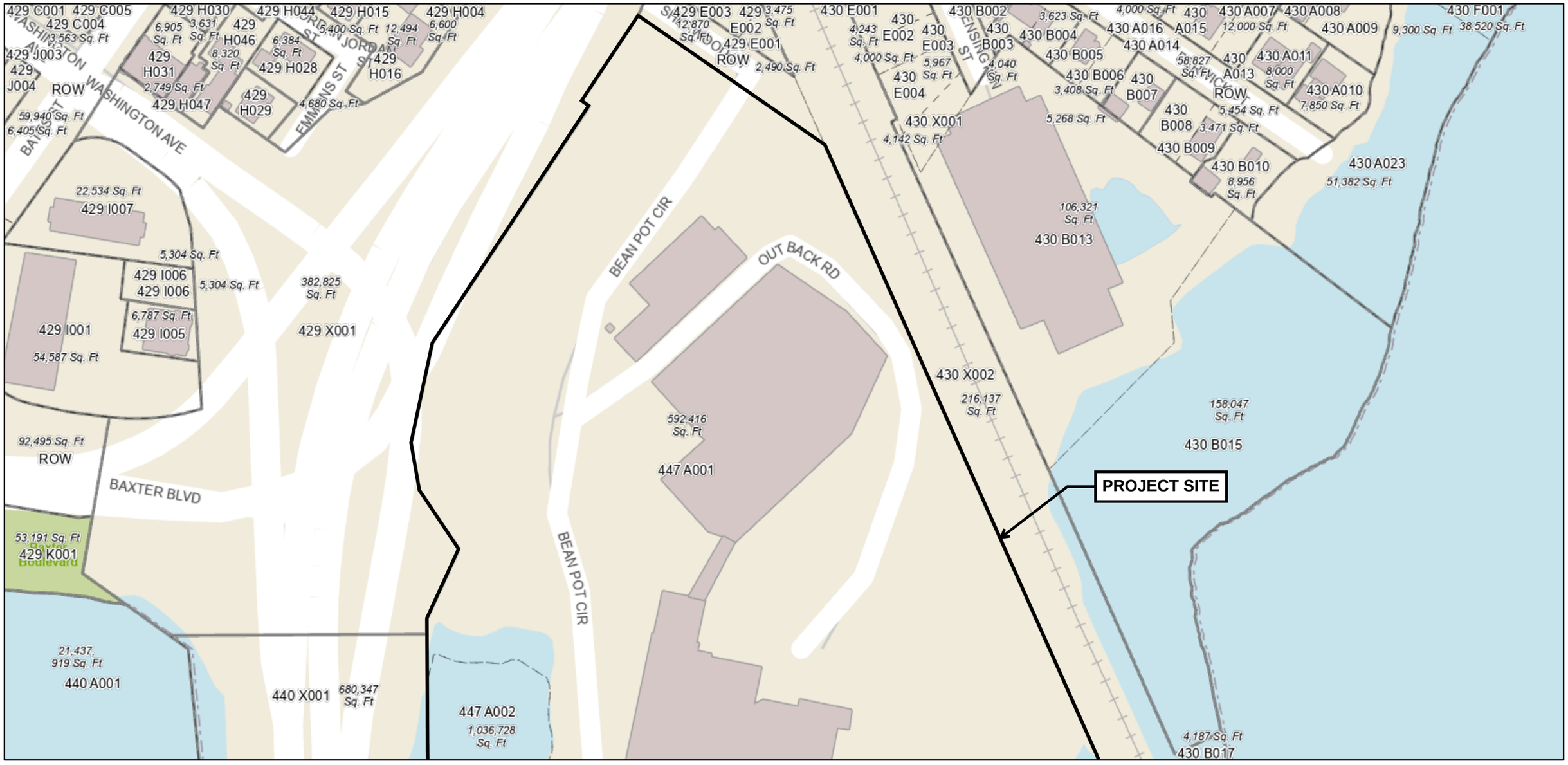
13. Consultant Services Agreement, by and between IDEALS and Woodard & Curran

14. Consultant Services Agreement, by and between IDEALS and Power Engineers

15. Consultant Services Agreement, by and between IDEALS and SW Cole Engineering

16. Consultant Services Agreement, by and between IDEALS and Stephen Stimson Associates

ArcGIS Web Map



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parcels

Tax

Conveyance

1:1,514

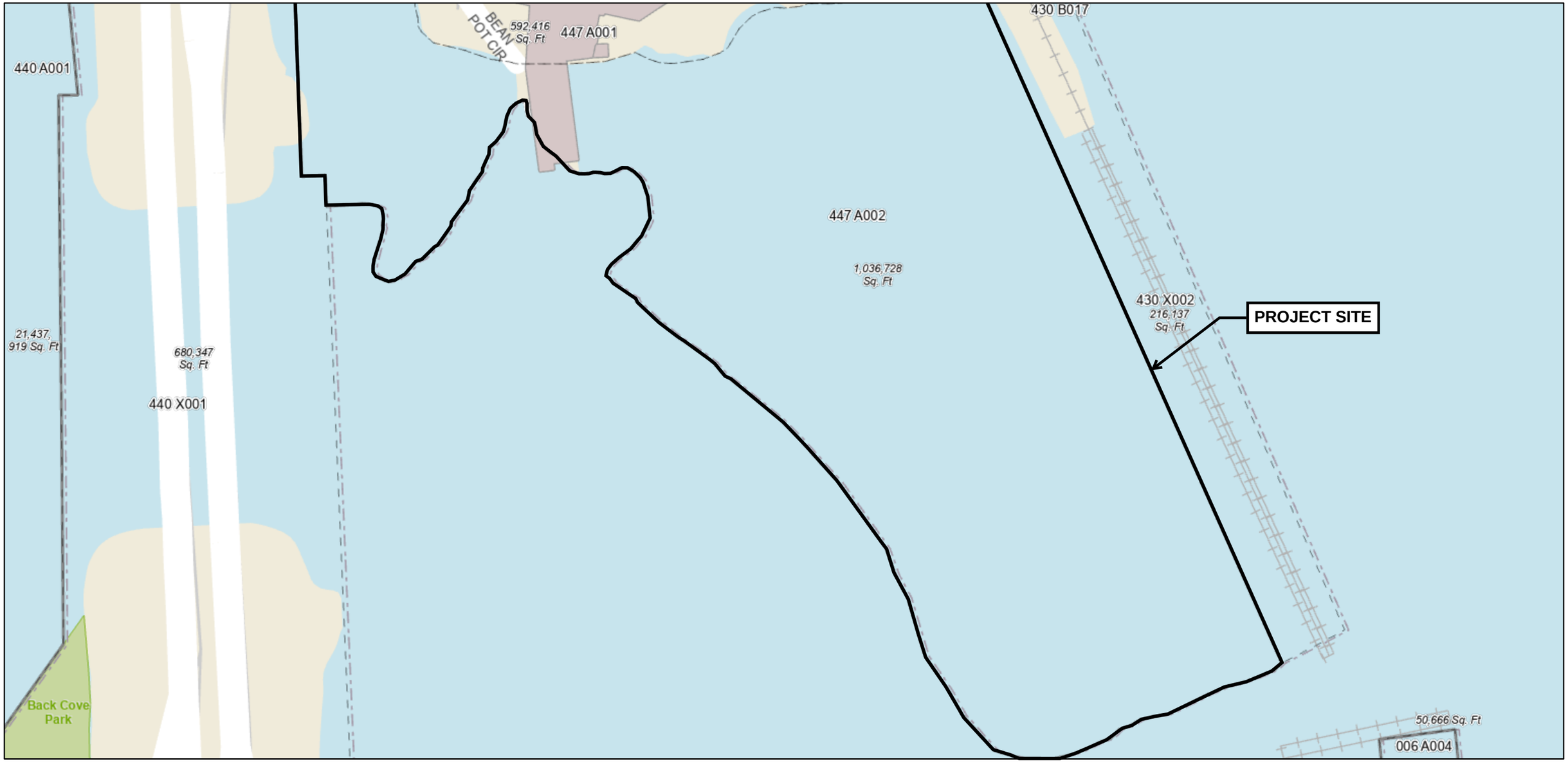
0 0.01 0.03 0.06 mi

0 0.03 0.06 0.11 km

City of Portland, DPS

Web AppBuilder for ArcGIS
City of Portland, Maine

ArcGIS Web Map



8/10/2023, 11:00:00 AM

parcels

Tax

Conveyance

1:1,514

0 0.01 0.03 0.06 mi

0 0.03 0.06 0.11 km

City of Portland, DPS

Web AppBuilder for ArcGIS
City of Portland, Maine

5. TRANSPORTATION STANDARDS (14.6.1)

The transportation infrastructure associated with the campus will be designed in compliance with Section 1, Transportation Systems and Street Design Standards, of the City of Portland Technical Manual as described in the following Sections. Each of the internal driveways on the Site will be designed consistent with the standards to accommodate vehicles, bicycles, and pedestrians in a safe manner. Additional information is provided in the attached memorandum prepared by VHB.

5.1 Access and Circulation (8.5.7.E.3 and 8.5.7.E.5)

Bike and Pedestrian

Bike and pedestrian circulation and amenities are foundational to the design of the campus. Consistent with the campus IDP, Phase 1 includes a 12-ft wide campus "Promenade" prioritizing pedestrian access through the center of campus, connecting the upland campus to the pier and waterfront. A 12-ft wide coastal path includes seating, amenities, and supports access to the waterfront. A perimeter access loop will provide circulation for bikes and pedestrians. These major organizing features will be complemented by supporting pathways that enhance pedestrian connectivity and circulation.



Figure 5-1: Bike Amenities and Circulation

Vehicular access is provided via proposed driveways for drop-off, parking maintenance, delivery, and emergency access to building loading zones. Additional emergency access is provided along the waterfront bike/ped trail. The design team has met with the Portland Police Department and Fire Department during development of this plan in consideration of emergency access. **Figure 5-2** provides a summary of emergency access route.

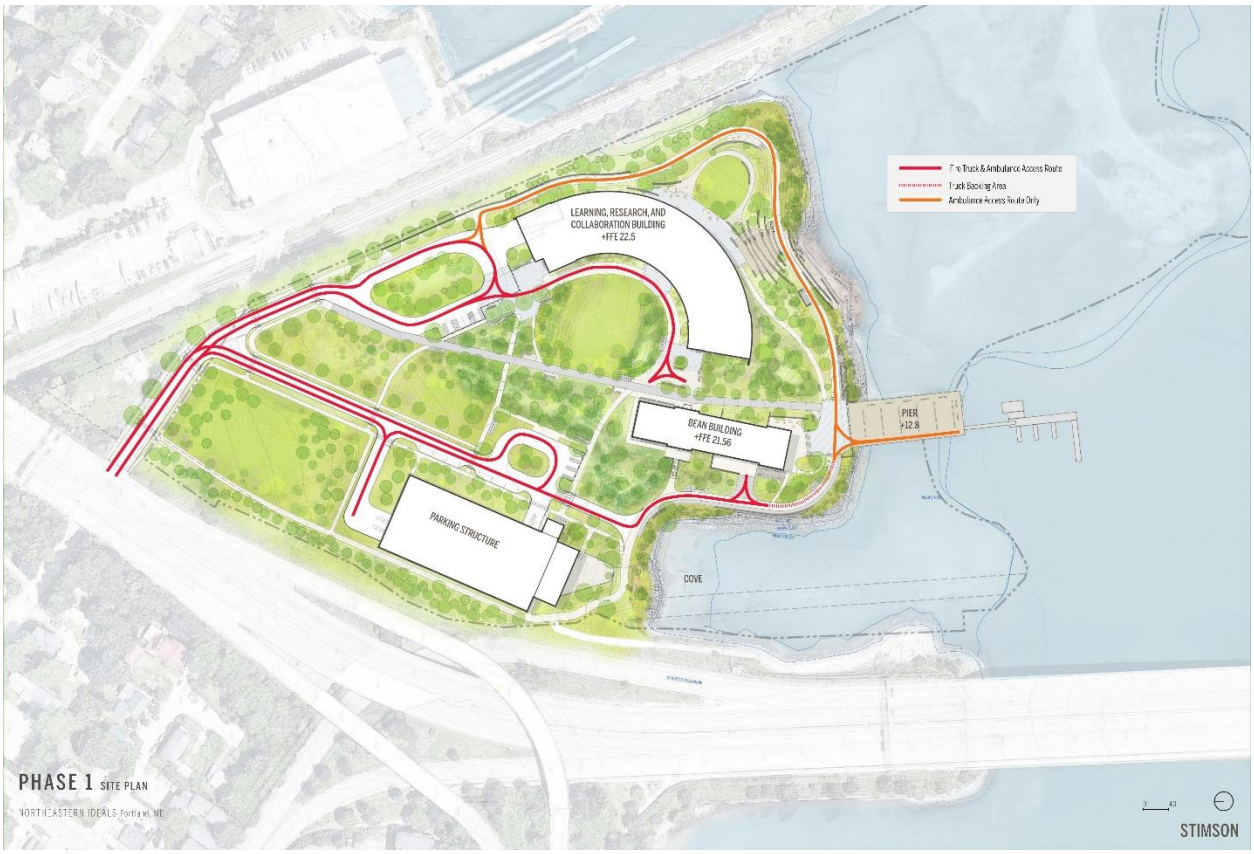


Figure 5-2: Emergency Access Routes

Sherwood Street Curb and Sidewalks

The project will also include improvements to the infrastructure on Sherwood Street to bring it into compliance with the Technical Manual Section 1. Little of the alignment is anticipated to change on Sherwood Street. Existing driveways will be restored according to the table in section 1.5.1 of the Technical Manual unless otherwise approved by Portland Department of Public Works.

The Applicant understands that infrastructure to support pedestrian and bicycle facilities are critical to the success of the campus. This project will add one public crosswalk across Sherwood Street at Veranda and a bicycle or shared-use lane will be added (as part of the Sherwood Street reconstruction).

Loading and Servicing

Loading and trash removal will be addressed in each of the buildings throughout the Site with designated spaces to accommodate deliveries and storage. A loading dock with internal roll-off waste container(s) is located in the service bay at the north side of the Learning, Research, and Collaboration Building, near the terminus of the vehicular turn around. The Bean Building will have a service entrance at the lower level of the west facade. Waste removal from the Bean Building will be managed through maneuverable roller containers, screened by a retaining wall shown near the service entrance and accessed by service vehicles occasionally via the coastal pathway.

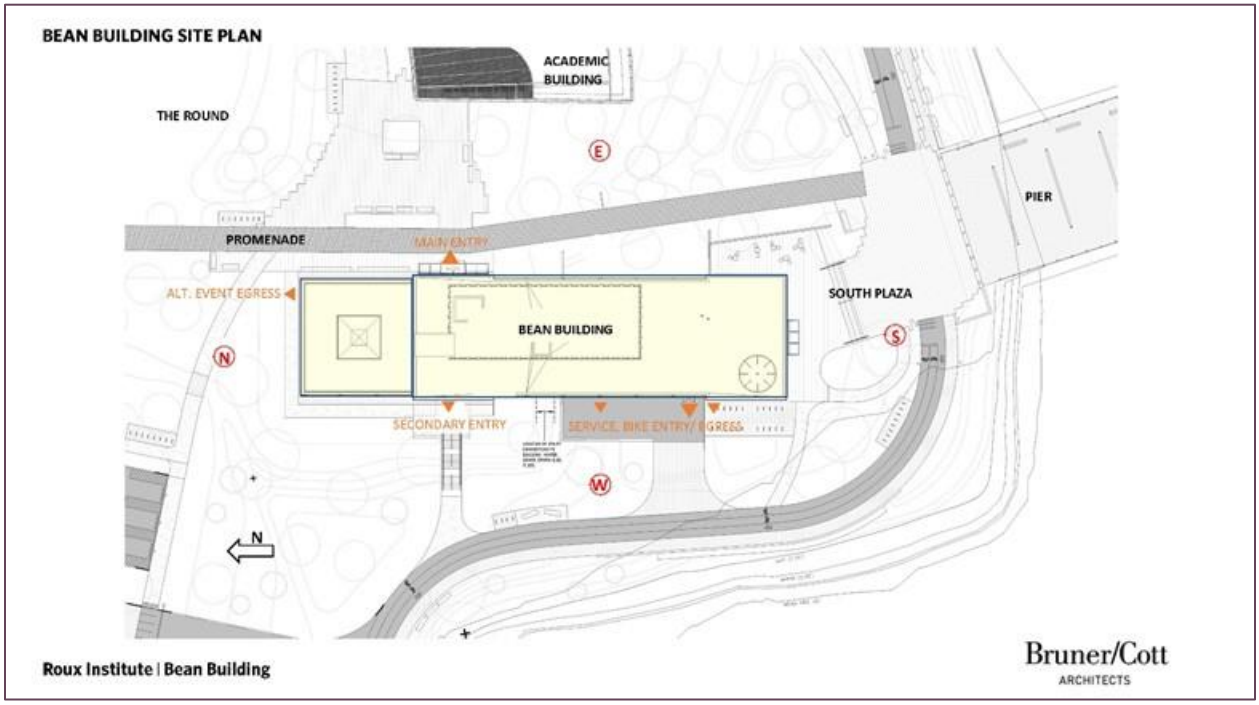


Figure 5-3: Bean Building Service Access

5.2 Public Transit Access

The campus is located along two existing public transit routes, METRO Route 7 and METRO Routes 9A/9B. There are no existing transit shelters within ¼ mile of the Site. Consistent with 14.6.1 (C), a transit shelter will be provided on-site that will connect to the public sidewalk system (which will also be improved providing sidewalks along both sides of Sherwood Street).

5.3 Parking (8.5.7.E.4)

Vehicular Parking

Northeastern University is committed to building off-street parking on campus in accordance with the technical requirements of this Code. A parking demand study has been prepared as part of the Site's Transportation Demand Management (TDM) plan.

Snow Storage

Snow storage areas will not encroach on areas designed to meet minimum parking requirements or on pedestrian walkways and will not be located where they would adversely impact the functionality of stormwater management systems.

Electric Vehicle (EV) Charging

The garage to be constructed with this project will include electric vehicle charging equipment. The applicant has performed an EV parking demand study to determine the final count of chargers, their power, and number of EV-ready spaces. A copy of the study is attached to this section.

Bicycle Parking

All bicycle parking will be in accordance with the parking requirements of this Land Use Code and the Transportation Systems and Street design standards of the Technical Manual. The location and style of racks will conform with the specifications in Section 1.12. Both outdoor and secured indoor bicycle parking will be available on campus. The following table summarizes compliance with bicycle parking space requirements.

Table 5-1: Bicycle Parking

	Provided
Interior Bicycle Parking in Garage	66
Exterior Secure Bicycle Parking	100
Total:	166

Furthermore, additional interior bicycle parking is anticipated to be included in the Bean Building once fit-out of the space is completed. Exterior bicycle parking will be distributed throughout campus, adjacent to points of interest and arrival, as demonstrated by **Figure 5-4**.

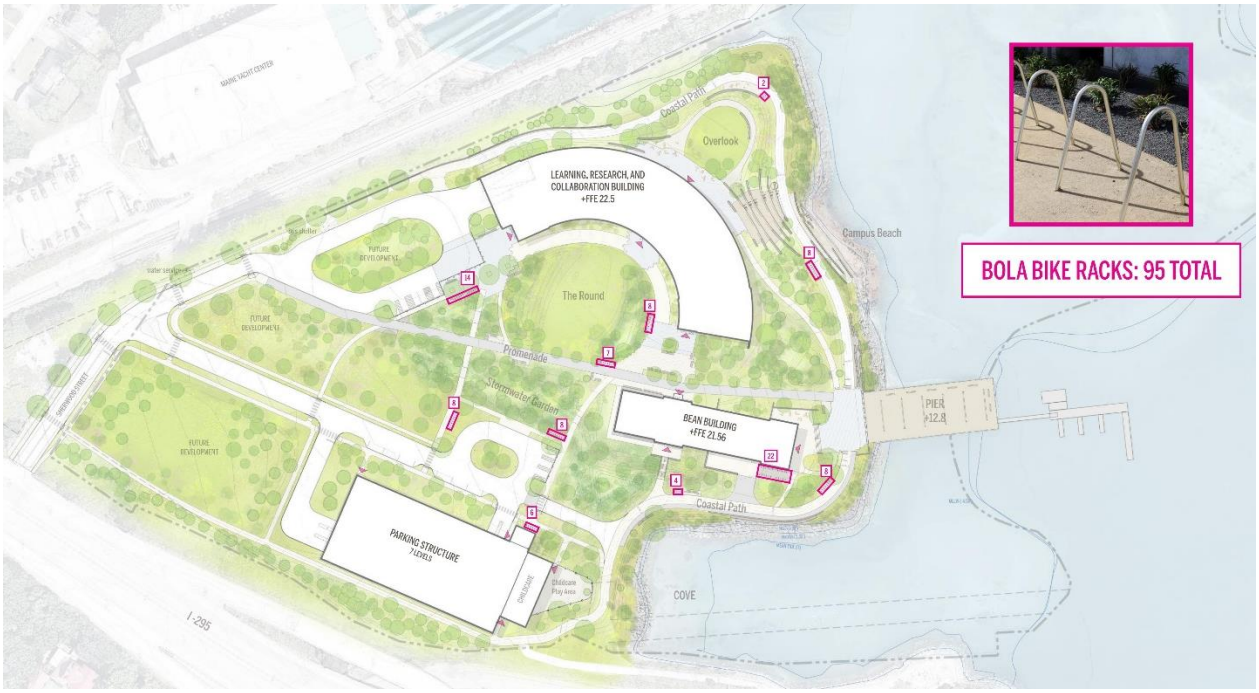


Figure 5-4: Exterior Bicycle Parking

5.4 Transportation Demand Management (8.5.7.E.1)

A TDM Plan was developed by VHB for Phase 1. This report will be uploaded separately to the Documents folder. The goal of the TDM Plan is to reduce parking demand and single occupancy vehicles. The TDM Plan includes parking, mode share, trip reduction strategies targets and a data collection plan.

5.5 Traffic Movement Permit (8.5.7.E.2)

This project will capture all vehicle loading/unloading and parking on-site. There will be a single access at the end of Sherwood Street with all internal circulation occurring off public streets. There will be separated pedestrian facilities, including a new sidewalk or shared use path along Sherwood Street. The incremental traffic volumes are under review by the Maine Department of Transportation as part of the Traffic Movement Permit process. A copy of the TMP permit approval will be provided upon receipt.

5.6 Section Attachments

- Supplemental Transportation Memorandum, prepared by VHB

5.7 Attachments Provided as Separate Files

The following materials referenced by this section of the report have been uploaded under separate cover for review.

- TDM Plan
- EV Parking Demand Study

Memorandum

To: Chuck Hewett
Sam Reiche

Date: November 7, 2023

Project #: 58570.00

From: Jennifer Conley, PE, PTOE

Re: Roux Institute at Northeastern University
Site Plan Transportation standards

The Roux Institute at Northeastern University is submitting a Phase 1 site plan application with the City of Portland. This memorandum is a supporting document that addresses the required Transportation Standards outlined in the city's Portland Plan in Section 14.6 Site Plan Review Standards.

Impact on Surrounding Street Systems (14.6.1(A))

Circulation

Vehicle loading/unloading and parking will occur on-site. A single vehicular access point to the site will be provided via Sherwood Street with all internal circulation occurring off public streets. The project will provide continuous sidewalks and bicycle accommodation on both sides of Sherwood Street. A crosswalk will be implemented across Sherwood Street at Veranda Street. Once on the site, pedestrian facilities will connect site uses and points along the waterfront. Improvements to pedestrian connections will increase walkability for the site.

Trip Generation

The incremental traffic volumes associated with the proposed project (trip generation) have been estimated as part of the Traffic Movement Permit (TMP) application that is being submitted to MaineDOT and are presented below. Any substantial congestion increases to public streets that may be identified through the MaineDOT TMP process will be mitigated with off-site improvements coordinated with MaineDOT and the City of Portland.

The student population is modeled using rates developed for the existing Roux Institute at Northeastern University Fore Street campus (100 Fore Street). Other proposed land uses and user populations are modeled using the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*.

For each land use and user population, trip generation was calculated for a weekday (full 24-hour period). This proposed development has disparate user populations whose trips will peak at different times of day. To accurately quantify this activity, 24-hour distributions for each user population were overlaid to identify the overall time and magnitude of the campus' peak times.

Trip rates developed specifically for the Roux Institute at Northeastern University were developed for students and faculty, affiliated users, special events and staff.

The following assumptions were made regarding the student population:

- 43% of student enrollment travels to campus each day.[1]

[1] January 2023 student survey

› 40% are daytime students and 60% are evening students.[2]

To determine the spread of student arrivals and departures throughout the day, a door count was conducted at the 100 Fore Street building on October 3rd, 2023.

The unadjusted ITE vehicle trip generation was calculated for the weekday AM and PM peak hours for the remainder of the land uses on site as presented in Table 1.

Table 1 Total Unadjusted Person Trips

Land Use	AM Peak Hour			PM Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total
Graduate students	134	0	**134**	282	161	**443**
Affiliated Users	20	0	**20**	0	40	**40**
Faculty, Staff, and Researchers[1]	8	0	**8**	16	9	**25**
Special Events	15	0	**15**	50	15	**65**
Academic Café	15	13	**28**	44	29	**73**
General Office[2]	103	24	**127**	29	114	**143**
Day care	13	13	**26**	17	19	**36**
Total	**308**	**50**	**358**	**438**	**387**	**825**

1 Students and staff in instructional or other student-facing roles (25% of total) were assigned to the student time-of-day distribution.
2 ITE Trip Generation Manual, 11th Edition LUC 710 General Office (Embedded Startups, Staff, and Researchers, and Signature Partners.

The Roux Institute at Northeastern University is anticipating that a significant portion of the peak hour trips presented in Table 1 will be made by alternative travel modes such as walking, biking, and transit and is expected to have internally captured trips for supporting uses (such as the café and day care). The total adjusted trip generation for the project is shown in Table 2. For a more detailed analysis of the trip generation breakdown for time-of-day distribution, internal capture, and mode share, please refer to the TMP application.

[2] Split provided by Northeastern University based on enrollment records and projections

Table 2 Total Adjusted Trips

Land Use	AM Peak Hour All Trips	AM Peak Hour Internal Trips	AM Peak Hour Transit Trips	AM Peak Hour Bike/Ped Trips	AM Peak Hour Vehicle Trips	PM Peak Hour All Trips	PM Peak Hour Internal Trips	PM Peak Hour Transit Trips	PM Peak Hour Bike/Ped Trips	PM Peak Hour Vehicle Trips
Graduate students	134	9	13	13	100	443	51	39	39	314
Affiliated Users	20	0	1	1	18	40	0	2	2	36
Faculty, Staff, and Researchers[1]	8	0	0	1	7	25	0	1	2	22
Special Events	15	0	1	1	14	65	0	3	3	59
Academic Café	28	28	0	0	0	73	73	0	0	0
General Office[2]	127	34	5	5	84	143	64	4	4	70
Day care	27	10	1	1	15	36	14	1	1	20
Total	**359**	**82**	**20**	**20**	**237**	**825**	**202**	**51**	**51**	**521**

1 Students and staff in instructional or other student-facing roles (25% of total) were assigned to the student time-of-day distribution.

During the TMP scoping meeting process, The City of Portland and MaineDOT will outline the requirements for the Traffic Impact Study and as stated above, any substantial congestion increases to public streets anticipated in the permit process will be mitigated with off-site improvements coordinated with MaineDOT and the City of Portland.

Access and Circulation (14.6.1(B))

The Roux Institute at Northeastern University shall provide safe and reasonable access and internal circulation for all users in accommodation with the standards outlined in the Technical Manual. Figures 1-2 below shows an illustrative site plan as well as a diagram showing bicycle, pedestrian, and transit accommodations internal to the site.

Memorandum

Figure 1 Illustrative Site Plan



As shown in Figure 2, a multiuse path will be constructed around the entire campus connecting to Sherwood Street that will serve bicyclists and pedestrians. In addition, multiple exterior bicycle parking locations are planned throughout the site, interior bicycle storage will be provided in the garage, and a bikeshare location and transit shelter are also proposed.

Memorandum

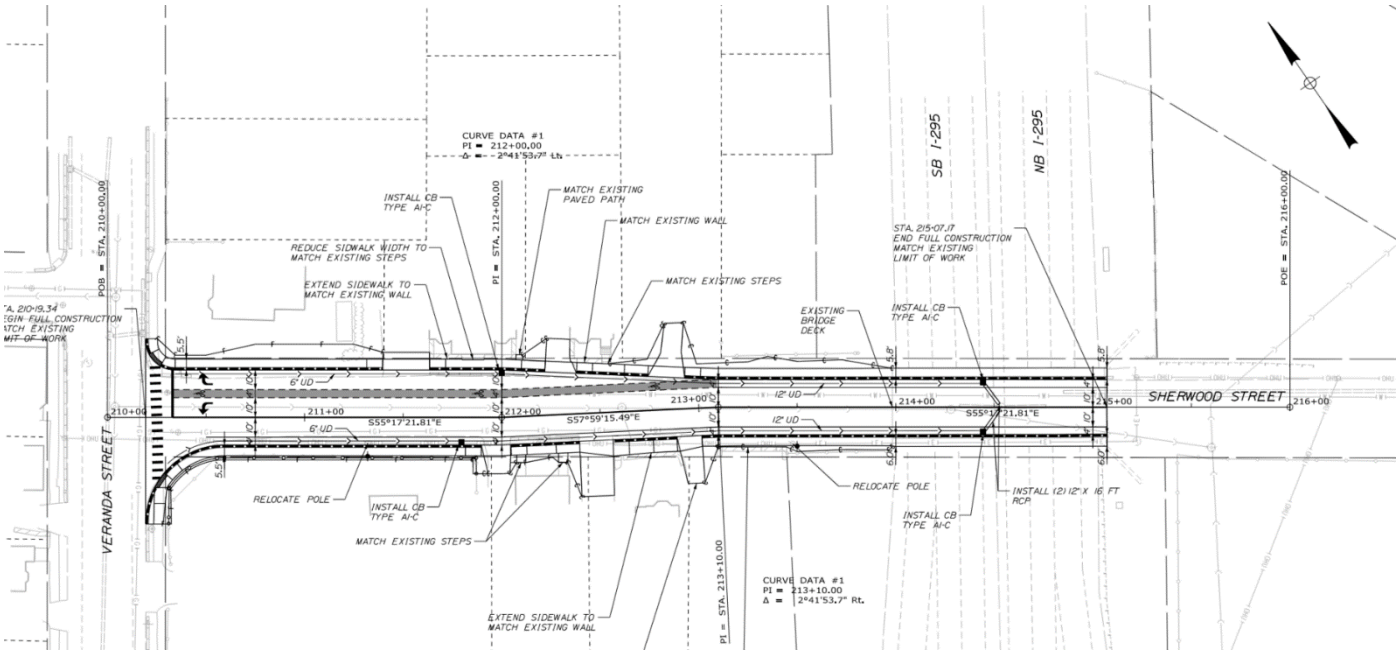
Figure 2 Alternative Modes of Transportation Accommodations



As part of the site plan application the shared use path around the site will connect into a reconstructed Sherwood Street. As shown in Figure 3, the redesign of Sherwood Street will include a bike lane and new sidewalks on each side of the street connecting to Veranda Street.

Memorandum

Figure 3 Sherwood Street Improvements



All public paths, sidewalks, and ADA ramps will be designed and consistent with requirements in the Technical Manual.

Public Transit (14.6.1(C))

The Roux campus is located within short walking distance of two existing public transit routes, METRO Route 7 and METRO Routes 9A/9B and there are no existing transit shelters within ¼ mile of the site. Consistent with 14.6.1 (C), a transit shelter will be provided on site that will connect to the public sidewalk system (which will also be improved providing sidewalks along both sides of Sherwood Street). The Roux Institute is working with METRO for service to be provided into the site.

The Roux Institute is committed to working with Portland METRO to support increased transit opportunities to and from the campus area. These factors, in addition to a Transportation Management Plan (TDM), will reduce auto mode share at the site.

METRO Route 7 and METRO Routes 9A/9B provide direct connections to the peninsula, North Deering, and Falmouth. With a transfer at any of the Downtown Transfer Centers, riders can reach the rest of the Portland and Greater Portland Region.

Buses run continuously throughout the day, readily accommodating the varied schedules of students and other campus users. METRO BREEZ express bus service to Yarmouth, Falmouth, and Brunswick and the Husky Line to

Westbrook and Gorham establish a regional footprint for transit service. Ten local and express routes connect the campus to most of the Portland area with no more than one transfer.

In addition, the Roux Institute at Northeastern University will promote and incentivize transit use by subsidizing transit passes for students, staff, and faculty.

Off-Street Parking (14.6.1(D))

Vehicular Parking

The Roux Institute at Northeastern University is committed to building off-street parking in accordance with the technical requirements. Parking space and aisle designs will meet specifications in the Technical Manual.

A parking demand study has been prepared, determining the capacity needed to accommodate long-term enrollment growth and other development on site. For opening, the peak demand on campus is anticipated to be 561 parking spaces. If the auto mode share remains as high as estimated at opening, demand would grow to 882. However, the Roux Institute proposes a full TDM program as described in the TDM Plan and anticipates that full occupancy parking will be accommodated in the proposed phase 1 parking. The parking garage has been designed to accommodate 708 parking spaces, however for the first phase, 16 of those vehicular parking spaces will be used to accommodate parking for bicycles and the remaining 692 spaces will be used for vehicular parking.

Bicycle Parking

All bicycle parking will be in accordance with the parking requirements of this Land Use Code and the Transportation Systems and Street design standards of the Technical Manual. As indicated above, there will be 66 parking spaces for bicycles in the garage. In addition, there will be another 100 exterior parking spaces provided around the site. Potential locations are shown in Figure 2.

Snow Storage

Snow storage areas and an acceptable snow removal plan will be provided with site plan review. Snow storage areas will not encroach on areas designed to meet minimum parking requirements or on pedestrian walkways and will not be located where they would adversely impact the functionality of stormwater management systems. Landscaping in designated snow storage areas will be such that it can withstand the snow pile.

Electric Vehicle (EV) charging

An EV demand study has been conducted to determine EV requirements. During opening year (2027) there will be a demand of 24 EV spaces and planning for a potential demand of 62 EV spaces by 2032. A formal EV Demand Study has been submitted to the City of Portland separate from this application.

Transportation Demand Management (TDM) (14.6.1(E))

A TDM plan has been drafted in accordance with Technical Manual Section 1 requirements and is submitted as separate document in this application.

November 13, 2023

Mr. Stephen Landry, PE
State Traffic Engineer MaineDOT
16 State House Station
Augusta, Maine 04333

Re: Application for Traffic Movement Permit
The Roux Institute at Northeastern University
Portland, Maine

Dear Stephen,

On behalf of IDEALS and The Roux Institute at Northeastern University (applicant), VHB is pleased to submit this Traffic Movement Permit Application for the development located at the former B&M Baked Beans property, 1 Beanpot Circle, Portland, ME 04103.

We have attached the following information in support of this application:

- Sections 1-6
- Signed Application Form
- Notice of Intent to File
- List of Abutters
- $500 application fee

We look forward to scheduling a Scoping Meeting in the near future.

Very truly yours,

Jennifer Conley, PE, PTOE
Director, Transportation Systems
Jconley@vhb.com

500 Southborough Drive
Suite 105B
South Portland, Maine 04106
P 207.889.3150
F 207.253.5596

Engineers | Scientists | Planners | Designers

Northeastern

October 25, 2023

Sam Reiche
Chief Operating Officer and Head of Real Estate
Initiative for Digital Engineering and Life Sciences (IDEALS)
100 Commercial Street, Suite 40
Portland, Maine 04101

Dear Sam:

Northeastern University is preparing plans for the first phase of development at the Roux Institute, located at 1 Bean Pot Circle in Portland Maine. Northeastern University is authorizing the Initiative for Digital Engineering and Life Sciences (IDEALS) and Woodard & Curran, Inc., to assist in the preparation of land-use permit applications for this project. IDEALS and Woodard & Curran are authorized as our agent to represent Northeastern University in addressing questions on the plans and applications for this project.

Sincerely,

Thomas E. Nedell,
Senior Vice President for Finance and Treasurer

Office of the Senior Vice President Finance

177 Huntington Ave.
360 Huntington Ave.
Boston, MA 02115

617.373.2240
fax 617.373.4728

finance.northeastern.edu

Department of Transportation
Traffic Engineering Division
16 State House Station
Augusta, Maine 04333
Telephone: 207-624-3600

FOR MDOT USE
ID #

Total Fees:

Date: Received

****

PERMIT APPLICATION - TRAFFIC
TRAFFIC MOVEMENT PERMIT, 23 M.R.S.A. § 704 - A

Please type or print:

This application is for:

Traffic 100-200 PCE's	____
Traffic 100-200 PCE's (Expedited)	____
Traffic 200+ PCE's	_X_

Name of Applicant: Northeastern University

Address: 360 Huntington Avenue, Boston, MA 02115 Telephone: 617-594-6092

Name of local contact or agent: Catherine Walsh

Address: 360 Huntington Avenue, Boston, MA 02115 Telephone: 617-594-6092

Name and type of development: The development consists of a 238,000 square foot Learning, Research, and Collaboration building accommodating 3,123 graduate students, 100 affiliated users, 150 person special events, and an 8,000 square foot café. It will also open with a 58,000 square foot Bean Building accommodating 300 faculty, staff, and researchers, 100 employee embedded startups, and 64 employee signature partners. There will also be a 50-child daycare.

Location of development including road, street, or nearest route number: The site is located at 1 Beanpot Circle bounded by Sherwood Street to the north.

City/~~Town/Plantation~~: Portland, County: Cumberland, Tax Map # 447, Lot # A001001

Do you want a consolidated review with DEP pursuant to 23 M.R.S.A. § 704-A (7)? Yes ____ No __X__

Was this development started prior to obtaining a traffic permit? No

Is the project located in an area designated as a growth area (as defined in M.R.S.A. title 30 - A, chapter 187)? Yes ____ No _____

Is this project located within a compact area of an urban compact municipality? Yes __X__No _____

Is this development or any portion of the site currently subject to state or municipal enforcement action? None Known

Existing DEP or MDOT permit number (if applicable): None Known

Name(s) of DOT staff person(s) contacted concerning this application: _____

_____

Name(s) of DOT staff person(s) present at the scoping meeting for 200+ applications: N/A_____

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.: Maine PE #15652

Name (print): Jennifer Conley_____

Date: _11/13/2023_____



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."

Sam Reiche, COO, IDEALS — 11/13/23

Signature of Applicants Agent — Date

NOTICE OF INTENT TO FILE
Traffic Movement Permit

Please take notice that

The Roux Institute at Northeastern University
100 Commercial Street
Portland, ME 04101

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 November 13, 2023.

The application is for the development of a 238,000 square foot Learning, Research, and Collaboration building accommodating 3,123 graduate students, 100 affiliated users, 150 person special events, and an 8,000 square foot café. It will also open with a 58,000 square foot Bean Building accommodating 300 faculty, staff, and researchers, 100 employee embedded startups, and 64 employee signature partners. There will also be a 50-child daycare. The project is forecast to generate 358 AM peak hour and 825 PM peak hour trip ends based on ITE Trip Generation, 11th edition for ancillary uses and existing arrival patterns/badge swipes and anticipated populations for academic uses. Each of the uses described are anticipated to be constructed in 2025 and 2026 and occupied by 2027.

at the following location:

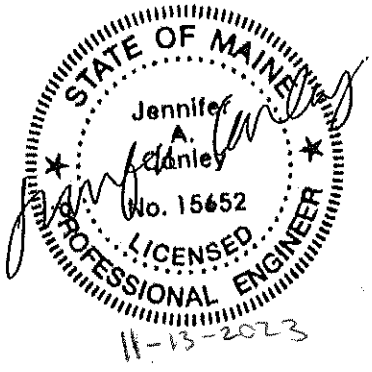
The site is located at 1 Beanpot Circle bounded by Sherwood Street to the north, I-295 to the west, and MaineDOT Railroad Right of Way to the east.

Any interested party may request in writing to participate in the MaineDOT scoping meeting for the subject project no later than 20 days after the application is found by the Department to be complete and is accepted for processing. Requests shall be sent to the State Traffic Engineer, 16 State House Station, Augusta, ME 04333. Public comments on the application pertaining to either congestion or safety will be accepted throughout the processing of the application.

The application will be filed for public inspection at the Department of Transportation Region office in Scarborough (Region 1) during normal working hours. Addresses may be found at the following website: https://www.maine.gov/mdot/about/regions/. A copy of the application may also be seen at the municipal offices in Portland, Maine.

Written public comments concerning congestion or safety only, may be sent to the Department of Transportation, State Traffic Engineer, 16 State House Station, Augusta, Maine 04333.

Jennifer Conley, PE, PTOE
VHB, Inc.



ABUTTERS LIST

Parcel ID	Property Location	Owner	Owner Address	Owner City	Owner State	Owner Zip
429 G001001	65 KENSINGTON ST	MAINE YACHT CENTER LLC	100 KENSINGTON ST	PORTLAND	ME	04103
429 E001001	43 SHERWOOD ST	STATE OF MAINE	N/A	AUGUSTA	ME	04333
429 E008001	73 SHERWOOD ST	STATE OF MAINE	N/A	AUGUSTA	ME	04333
429 H004001	78 SHERWOOD ST	STATE OF MAINE	N/A	AUGUSTA	ME	04333
429 H003001	80 SHERWOOD ST	BRENNAN JOSEPH & KRISTIN BRENNAN JTS	80 SHERWOOD ST	PORTLAND	ME	04103
429 D005001	81 SHERWOOD ST	CARLING GABRIEL BEN & JULIE ANN CARLING JTS	81 SHERWOOD ST	PORTLAND	ME	04103
429 H002001	82 SHERWOOD ST	FITZGERALD RYAN	988 SAWYER ST	SOUTH PORTLAND	ME	04106
429 D004001	87 SHERWOOD ST	87-89 SHERWOOD STREET LLC	4 COUNTRY LN	FALMOUTH	ME	04105

ArcGIS Web Map



11/3/2023, 9:51:17 AM

tax_parcels parcels Conveyance

Tax Tax

1:2,850

0 0.02 0.04 0.09 mi

0 0.04 0.07 0.15 km

City of Portland, DPS

Web AppBuilder for ArcGIS

City of Portland, Maine



The Roux Institute at Northeastern University

Traffic Movement Permit (TMP) Application – 2032

PREPARED FOR

Roux Institute at Northeastern University / IDEALS
100 Commercial Street
Portland, ME 04101

PREPARED BY

500 Southborough Drive
Suite 105B
South Portland, ME 04106
207.889.3150

NOVEMBER 2023

Table of Contents

1 Section 1: Site and Traffic Information 1

1.A Site Description and Site Plan 1
1.B Existing and Proposed Site Uses 1
Existing Uses 1
Proposed Site Uses 2
1.C Regional Mapping 2
1.D Proposed Uses in the Study Area 3
1.E Trip Generation 3
Site-Specific Trip Rates 3
Internal Capture 6
Mode Share 7
Peak Hour Trips 7
1.F Trip Distribution 8
1.G Trip Assignment 8
1.H Attachments 8
Attachment 1A 9
Site Survey 9
Proposed Site Plan 9
Attachment 1B 10
Site Location Map 10
Attachment 1C 11
Trip Generation Calculations 11
Attachment 1D 12
Trip Distribution Project Generated Trips Figures 12

2 Section 2: Traffic Crashes 1

2.A Crash Summary Data 1
2.B Bicycle and Pedestrian Crashes 2
2.C Attachments 2
Attachment 2A 3
Node Map Crash Summary Report 3
HCL Diagrams 3

3 Section 3: Development Entrances and Exits 1

3.A Entrance and Exit Locations 1
3.B Plan View 1
3.C Stopping Sight Distances 1
3.D Entrance/Exit Compliance with Design Requirements 1

4 Section 4: Title, Right, or Interest 1

4.A Evidence of Title, Right, or Interest 1
4.B Attachments 1
Attachment 4A 2
Deeds and Purchase and Sale Agreement 2

5 Section 5: Public or Private Right-of-Way 1

5.A Public or Private Rights–of–Way 1

6 Section 6: Schedule 1

6.A Schedule 1

1

Section 1: Site and Traffic Information

1.A Site Description and Site Plan

The Roux Institute at Northeastern University is a graduate education and research institution temporarily operating at 100 Fore Street in the Old Port neighborhood. The development proposed in this application is a relocation of the Institute to the former B&M Baked Beans site at 1 Beanpot Circle. In its permanent waterfront location in East Deering, the Roux Institute at Northeastern University will continue to provide educational, research, and collaborative programs in areas including artificial intelligence, computer and data sciences, digital engineering, advanced life sciences, and medicine. The Roux Institute at Northeastern University offers post-graduate degrees and certifications, conducts research, assists start-ups, and partners with private, public and non-profit organizations and is proposing to redevelop the B&M Baked Beans facility to establish a permanent campus.

Vehicles can access the site via a single entry and exit point. All vehicles will travel through the intersection of Veranda and Sherwood Streets and under the I-295 underpass to access the site. Other key routes near the site are Interstate 295, US Route 1 (Veranda Street), Washington Avenue, and Baxter Boulevard. Since the former factory buildings are not operational, no trip generation credit for existing use will be taken. The site, which is completely within the City of Portland, is identified by the following parcel number:

- 447 A001001

The site and boundary surveys and proposed site plan are included in Attachment 1A.

1.B Existing and Proposed Site Uses

The following describes the existing and proposed uses:

Existing Uses

The site was previously occupied by B&M Baked Beans. The parcel was zoned I-M (industrial) and had a trip pattern typical of shift work. The factory has been closed since 2021 while the site awaits redevelopment. As the site is currently vacant, no trip credit for existing uses will be taken.

Proposed Site Uses

The Roux Institute at Northeastern University intends to develop a dynamic, mixed-use campus that contributes to the East Deering neighborhood without encroaching on it.

The campus will be anchored by the 238,000 square foot Learning, Research, and Collaboration building housing most of the academic programs. It will also open with the 58,000 square foot Bean Building housing a start-up incubator program. By 2032, the campus plans to accommodate 3,123 graduate students in addition to the ancillary uses shown in Table 1. The campus will also have dining and an on-site day care center for children of students and staff. In addition to its academic offerings, the campus will benefit the community by providing open space along the waterfront, active transportation accommodations throughout the site, job creation, innovation space, and will contribute to economic growth.

Table 1 Proposed Uses

Program Component		2032 Build-Out
Roux Institute at Northeastern University	Graduate students	3,123 students
	Faculty, Staff, and Researchers	300 staff
	Embedded startup	100 staff
	Signature Partners	64 staff
	Affiliated Users	100 visitors
	Special Events (daily)	150 attendees
Day care center		50 Children
Academic Café		8,000 sf

The campus will open with a 708-space parking structure (vehicular capacity of 692 and bicycle capacity of 66 in opening year). All on-site parking will be paid parking, and a parking office will be created to manage permitting and enforcement for the campus. Parking costs and regulations may vary between categories of users (students, staff, faculty, visitors, etc.). Parking will be shared by all uses, not assigned to programs or buildings.

1.C Regional Mapping

Site location maps showing the development area is included in Attachment 1B.

The proposed Roux Campus is located within Portland's East Deering neighborhood with proximity to both residential and commercial areas and I-295.

The site is directly north of downtown Portland, bounded by I-295, Sherwood Street, and Casco Bay.

1.D Proposed Uses in the Study Area

Projects that have been approved but are not yet occupied as well as projects that have applied for approval are required to be included in the predevelopment traffic volumes.

- Front Street Housing Redevelopment
- Winchester Woods Apartments

1.E Trip Generation

Trip generation estimates for the Project are based on the 2032 development program presented in Table 2. The student population is modeled based on anticipated population profiles and existing entries and exits at the Fore Street site. Other uses and users are modeled using the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*.

For each use, trip generation was calculated for a weekday (full 24-hour period). This development has disparate uses whose trips will peak at different times of day. To accurately describe this profile, 24-hour distributions for each use were overlaid to identify the time and magnitude of the campus' peak times. Table 2 lists the method used for each use's rate and time of day distribution.

Table 2 Development Program by Land Use

Category	Unit	ITE Land Use Code[1]
Graduate students	Students	*Non-ITE (see narrative)*
Faculty, Staff, and Researchers[2]	Employees	*710 General Office*
Embedded startups	Employees	*710 General Office*
Signature Partners	Employees	*710 General Office*
Affiliated Users	Daily Visitors	*Non-ITE (see narrative)*
Special Events	Daily Attendees	*Non-ITE (see narrative)*
Day care	Children	*565 Day Care Center*
Academic Café	Gross floor area	*932 High-Turnover Restaurant*

1 ITE Trip Generation Manual, 11th Edition

2 Staff in instructional or other student-facing roles (25% of total) were assigned to the student time-of-day distribution.

Site-Specific Trip Rates

Trip rates developed specifically for the Roux Institute at Northeastern University were developed for students, affiliated users, and special events. 25% of staff will also follow the student distribution.

Based on data at the existing facility, and future enrollment projections, the following factors were used to develop the population distribution.

- 43% of student enrollment travels to campus each day.[1]
- 40% are daytime students and 60% are evening students.[2]

To determine the spread of student arrivals and departures throughout the day, a door count was conducted at the 100 Fore Street building on October 3rd, 2023. This count was converted to the time-of-day distribution shown in Table 3.

Table 3 Academic Trips – Time of Day Distribution

	Day Students		Night Students	
Time	In	Out	In	Out
7:00 AM	10%			
8:00 AM	25%			
9:00 AM	20%			
10:00 AM	25%			
11:00 AM	20%			
12:00 PM				
1:00 PM				
2:00 PM		10%		
3:00 PM		25%		
4:00 PM		30%	20%	
5:00 PM		30%	35%	
6:00 PM		5%	20%	15%
7:00 PM			10%	15%
8:00 PM			10%	15%
9:00 PM			5%	35%
10:00 PM				20%
Total	100%	100%	100%	100%

Site-specific trip profiles were also developed for special events and affiliated users (miscellaneous visitors not captured in other categories). These profiles are shown in Table 4.

[1] January 2023 student survey

[2] Split provided by Northeastern University based on enrollment records and projections

Table 4 Affiliated User and Special Event Distribution

	Affiliated Users 25 persons/day		Special Events – Day 25 persons/day		Special Events – Lunch 25 persons/day		Special Events – Night 100 persons/day	
	In	Out	In	Out	In	Out	In	Out
7:00 am	10%		20%					
8:00 am	20%		60%					
9:00 am	40%		20%					
10:00 am	20%							
11:00 am	10%				80%			
12:00 pm					20%			
1:00 pm						20%		
2:00 pm						80%		
3:00 pm		10%						
4:00 pm		20%		20%			10%	
5:00 pm		40%		60%			50%	
6:00 pm		20%		20%			40%	20%
7:00 pm		10%						50%
8:00 pm								30%

The profiles provided were applied to the number of people in each population anticipated to be on campus in a given day. The unadjusted ITE trip generation was calculated for the remaining uses on the campus. The resulting person trip generation for the weekday AM and PM peak hours is presented in Table 5.

Table 5 Total Unadjusted Trips

Land Use	AM Peak Hour			PM Peak Hour		
	Origin (Exiting)	Destination (Entering)	Total	Origin (Exiting)	Destination (Entering)	Total
Graduate students	134	0	**134**	282	161	**443**
Bean Building[1]	103	24	**127**	29	114	**143**
Faculty, Staff, and Researchers[2]	8	0	**8**	16	9	**25**
Affiliated Users	20	0	**20**	0	40	**40**
Special Events	15	0	**15**	50	15	**65**
Day care	13	13	**26**	17	19	**36**
Academic Café	15	13	**28**	44	29	**73**
Total	**308**	**50**	**358**	**438**	**387**	**825**

1 ITE Trip Generation Manual, 11th Edition LUC 710 General Office (Embedded Startups, Faculty, Staff, and Researchers, and Signature Partners.

2 Staff in instructional or other student-facing roles (25% of total) were assigned to the student time-of-day distribution.

Internal Capture

Dining and child care are planned to be developed as ancillary services for the student and employee population. Apart from their own employees, they will not generally attract external trips. To account for this and the crossover between student and office populations (typically students involved with an on-site startup), targeted internal capture reductions were calculated for these specific cases.

Calculations for internal trips were made on the following assumptions:

- 100% of trips to/from the cafeteria are internal, made by either students or staff
- 80% of trips exiting the day care in the AM are to another on site use, and 80% of trips entering the day care in the PM originate on-site
- 10% of the office/lab/startup workforce are students who will combine trips

Table 6 and Table 7 show the resulting internal trip counts.

Table 6 Pedestrian Trips Between Uses, AM Peak Hour

			Total Entering Destination					
			134	20	15	103	13	15
			Students	Affiliated Users	Special Events	Office	Day Care Center	Cafeteria
Total Exit Origin	0	Students						
	0	Affiliated Users						
	0	Special Events						
	24	Office	2					15
	13	Day Care Center				10		
	13	Cafeteria	6			7		

Table 7 Pedestrian Trips Between Uses, PM Peak Hour

			Total Entering Destination					
			282	0	50	29	17	44
			Students	Affiliated Users	Special Events	Office	Day Care Center	Cafeteria
Total Exit Origin	161	Students				3		22
	40	Affiliated Users						
	15	Special Events						
	114	Office	11				14	22
	19	Day Care Center						
	29	Cafeteria	14			15		

Mode Share

The Roux Institute at Northeastern University is anticipating significant percentages of trips to campus will be made by alternative modes (walking, biking, and transit). During the Institutional Development Plan (IDP) process, Ideals and the Roux Institute set aspirational goals for the mode shares associated with the build out of the site. The initial phase will include academic space, business partners, a startup incubator, day care, and a café.

Anticipated future infrastructure investments, including off-street connections, will significantly increase the appeal of biking and walking to campus. The site will also be well-served by transit. The site plan includes a bus stop and layover area, and the applicant is in discussions with Metro to reduce headways and other improvements to transit in the area.

Understanding that some of these improvements are contingent on grant awards and other external factors, the applicant has elected to calculate trips conservatively in this permit. As a result, the auto mode share used for permitting is higher than the goals set out in the IDP and internally. These shares will be more realistic in the campus' first years and likely shift more towards alternative modes as those options continue to improve.

For this permit, trips have been calculated with a 90% auto mode share, 5% transit, and 5% walk/bike for all users except students, which are calculated with an 80/10/10 split.

Peak Hour Trips

After applying the site-specific or ITE person trip profiles outlined above and adjusting for mode share and internal capture, a 24-hour trip generation profile was created for the campus. As shown in Table 8, the peak volume of external vehicle trips occurs from 8:00-9:00 in the morning and 5:00-6:00 pm in the evening. Detailed calculations are provided in Attachment 1C.

Table 8 Peak Hour Trips

Use	AM Peak Hour					PM Peak Hour				
	All Trips	Internal Trips	Transit Trips	Bike/Ped Trips	Vehicle Trips	All Trips	Internal Trips	Transit Trips	Bike/Ped Trips	Vehicle Trips
Students	134	9	13	13	100	443	51	39	39	314
Affiliated Users	20	0	1	1	18	40	0	2	2	36
Special Events	15	0	1	1	14	65	0	3	3	59
Office	127	34	5	5	84	143	64	4	4	70
Faculty[1]	8	0	0	1	7	25	0	1	2	22
Day Care	27	10	1	1	15	36	14	1	1	20
Café	28	28	0	0	0	73	73	0	0	0
Total	**359**	**82**	**20**	**20**	**237**	**825**	**202**	**51**	**51**	**521**

1. Portion of staff/faculty that follow the student distribution

1.F Trip Distribution

Multiple sources of commuting data were consulted to generate a trip distribution pattern for the site. The initial distribution was developed based on US Census Journey to Work data for the City of Portland. Towns were divided into 9 zones based on their likely routing to the campus. This was compared to a roster of student and employee home addresses from the Fall 2023 semester, which found comparable results and supported using the Journey to Work data set. The distribution and routing is shown below in Table 9.

Table 9 Trip Distribution

Zone	% of Commuters	Routing
I-295 Points North	14%	I-295 to Exit 8
I-95 Points North	3%	Exit 53 to ME-100 to Washington Ave
ME-26/100 Points North/West	8%	Washington Ave
US-302 Points North/West	8%	US-302 to Read St to Ocean Ave to Washington Ave
ME-25 Points West	1%	25B-Warren-Forest-Read-Ocean-Washington
I-295 Points South	51%	Entering: 75% to Exit 8 / 25% to Exit 9. Exiting: 50%/50%.
Baxter Blvd	5%	Baxter to Bates to Veranda
US-1 North	7%	Via Martin's Point Bridge
Presumpscot/Rt 9	3%	Presumpscot to Sherwood

1.G Trip Assignment

Using the distribution described above, external vehicle trips were routed through the road network. All vehicle trips are anticipated to start or end at the end of Sherwood Street. New vehicle trips were assigned according to the routing listed in the previous section. The resulting trip assignment is shown in Attachment 1D.

1.H Attachments

Attachment 1A – Site Survey, Proposed Site Plan

Attachment 1B – Site Location Map

Attachment 1C – Trip Generation Calculations

Attachment 1D - Trip Distribution and Project Generated Trips Figures

Attachment 1A

Site Survey

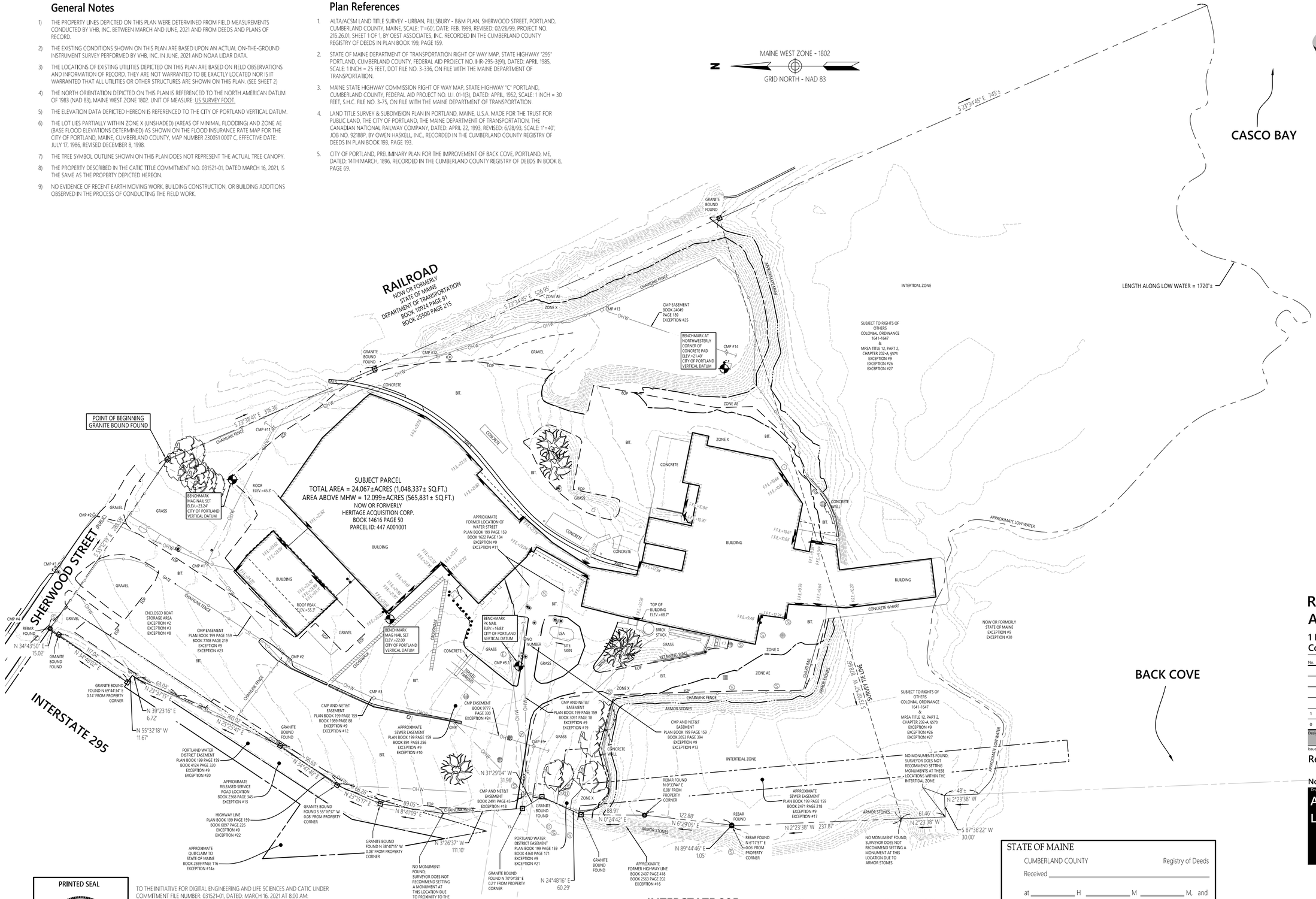
Proposed Site Plan

General Notes

1) THE PROPERTY LINES DEPICTED ON THIS PLAN WERE DETERMINED FROM FIELD MEASUREMENTS CONDUCTED BY VHB, INC. BETWEEN MARCH AND JUNE, 2021 AND FROM DEEDS AND PLANS OF RECORD.
2) THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY VHB, INC. IN JUNE, 2021 AND NOAA LIDAR DATA.
3) THE LOCATIONS OF EXISTING UTILITIES DEPICTED ON THIS PLAN ARE BASED ON FIELD OBSERVATIONS AND INFORMATION OF RECORD. THEY ARE NOT WARRANTED TO BE EXACTLY LOCATED NOR IS IT WARRANTED THAT ALL UTILITIES OR OTHER STRUCTURES ARE SHOWN ON THIS PLAN. (SEE SHEET 2)
4) THE NORTH ORIENTATION DEPICTED ON THIS PLAN IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD 83), MAINE WEST ZONE 1802. UNIT OF MEASURE: US SURVEY FOOT.
5) THE ELEVATION DATA DEPICTED HEREON IS REFERENCED TO THE CITY OF PORTLAND VERTICAL DATUM.
6) THE LOT LIES PARTIALLY WITHIN ZONE X (UNSHADED) (AREAS OF MINIMAL FLOODING) AND ZONE AE (BASE FLOOD ELEVATIONS DETERMINED) AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR THE CITY OF PORTLAND, MAINE, CUMBERLAND COUNTY, MAP NUMBER 230051 0007 C, EFFECTIVE DATE: JULY 17, 1986, REVISED DECEMBER 8, 1998.
7) THE TREE SYMBOL OUTLINE SHOWN ON THIS PLAN DOES NOT REPRESENT THE ACTUAL TREE CANOPY.
8) THE PROPERTY DESCRIBED IN THE CATIC TITLE COMMITMENT NO. 031521-01, DATED MARCH 16, 2021, IS THE SAME AS THE PROPERTY DEPICTED HEREON.
9) NO EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION, OR BUILDING ADDITIONS OBSERVED IN THE PROCESS OF CONDUCTING THE FIELD WORK.

Plan References

1. ALTA/ACSM LAND TITLE SURVEY - URBAN, PILLSBURY - B&M PLAN. SHERWOOD STREET, PORTLAND, CUMBERLAND COUNTY, MAINE, SCALE: 1"=60', DATE: FEB. 1999, REVISED: 02/26/99, PROJECT NO. 215.26.01, SHEET 1 OF 1, BY OEST ASSOCIATES, INC. RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 199, PAGE 159.
2. STATE OF MAINE DEPARTMENT OF TRANSPORTATION RIGHT OF WAY MAP, STATE HIGHWAY "295" PORTLAND, CUMBERLAND COUNTY, FEDERAL AID PROJECT NO. I-IR-295-3(91), DATED: APRIL 1985, SCALE: 1 INCH = 25 FEET, DOT FILE NO. 3-336, ON FILE WITH THE MAINE DEPARTMENT OF TRANSPORTATION.
3. MAINE STATE HIGHWAY COMMISSION RIGHT OF WAY MAP, STATE HIGHWAY "C" PORTLAND, CUMBERLAND COUNTY, FEDERAL AID PROJECT NO. U.I. 01-1(3), DATED: APRIL, 1952, SCALE: 1 INCH = 30 FEET, S.H.C. FILE NO. 3-75, ON FILE WITH THE MAINE DEPARTMENT OF TRANSPORTATION.
4. LAND TITLE SURVEY & SUBDIVISION PLAN IN PORTLAND, MAINE, U.S.A. MADE FOR THE TRUST FOR PUBLIC LAND, THE CITY OF PORTLAND, THE MAINE DEPARTMENT OF TRANSPORTATION, THE CANADIAN NATIONAL RAILWAY COMPANY, DATED: APRIL 22, 1993, REVISED: 6/28/93, SCALE: 1"=40', JOB NO. 92188P, BY OWEN HASKELL, INC., RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 193, PAGE 193.
5. CITY OF PORTLAND, PRELIMINARY PLAN FOR THE IMPROVEMENT OF BACK COVE, PORTLAND, ME, DATED: 14TH MARCH, 1896, RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 8, PAGE 69.



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vhb
500 Southborough Drive
Suite 105B
South Portland, ME 04106
207.889.3150

Legend

- DRAIN MANHOLE
- CATCH BASIN
- SEWER MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- MANHOLE
- HH□ HAND HOLE
- WATER GATE
- FIRE HYDRANT
- GAS GATE
- BOLLARD w/LIGHT
- STREET SIGN
- LIGHT POLE
- UTILITY POLE
- GUY POLE
- GUY WIRE
- MONITORING WELL
- FLOOD LIGHT
- (W) WELL
- MARSH
- F.F.E.=45.27' FINISHED FLOOR ELEVATION
- CNO COULD NOT OPEN
- NPV NO PIPES VISIBLE
- DYL DOUBLE YELLOW LINE
- DWL DASHED WHITE LINE
- SYL SINGLE YELLOW LINE
- LSA LANDSCAPED AREA
- EOP EDGE OF PAVEMENT
- CC CONCRETE CURB
- VGC VERTICAL GRANITE CURB
- SGE SLOPED GRANITE EDGE
- BB BITUMINOUS BERM
- BC BITUMINOUS CURB
- GUARD RAIL
- CHAIN LINK FENCE
- DRAINAGE LINE
- SEWER LINE
- OHW OVERHEAD WIRE
- E UNDERGROUND ELECTRIC
- T TELEPHONE LINE
- G GAS LINE
- W WATER LINE
- STONE WALL
- TREE LINE
- 100'BZ 100-FT BUFFER ZONE
- 100'RA 100-FT RIVER FRONT AREA
- 200'RA 200-FT RIVER FRONT AREA
- AHW-100 LIMIT MEAN ANNUAL HIGH WATER
- BH-100 LIMIT OF BANK
- WFT-100 VEGETATED WETLAND BOUNDARY

Record Owner: Heritage Acquisition Corp.

1 Bean Pot Circle, City of Portland
County of Cumberland, State of Maine

No.	Revision	Date	Appvd.
1	Update Certification	2/28/2022	JSG
0	Client Comments	2/21/2022	JSG

Designed by | Checked by

Issued for: **Review** — Date: **June 30, 2021**

Not Issued For Construction

Drawing Title: **ALTA/NSPS Land Title Survey**

Drawing Number: **Sv-1**

Sheet 1 of 3

Project Number: **58570.00**

PRINTED SEAL

STATE OF MAINE — JEFFREY SHERMAN GREINER 2539 PROFESSIONAL LAND SURVEYOR

TO THE INITIATIVE FOR DIGITAL ENGINEERING AND LIFE SCIENCES AND CATIC UNDER COMMITMENT FILE NUMBER: 031521-01, DATED: MARCH 16, 2021 AT 8:00 AM:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 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, 7(c), 8, 13, 16, AND 20 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED IN JUNE, 2021.

BY Jeffrey Sherman Greiner 2/28/2022
JEFFREY SHERMAN GREINER, P.L.S. #2539 — DATE

STATE OF MAINE

CUMBERLAND COUNTY — Registry of Deeds

Received _____

at _____ H _____ M _____ M, and

recorded in Book _____ Page _____

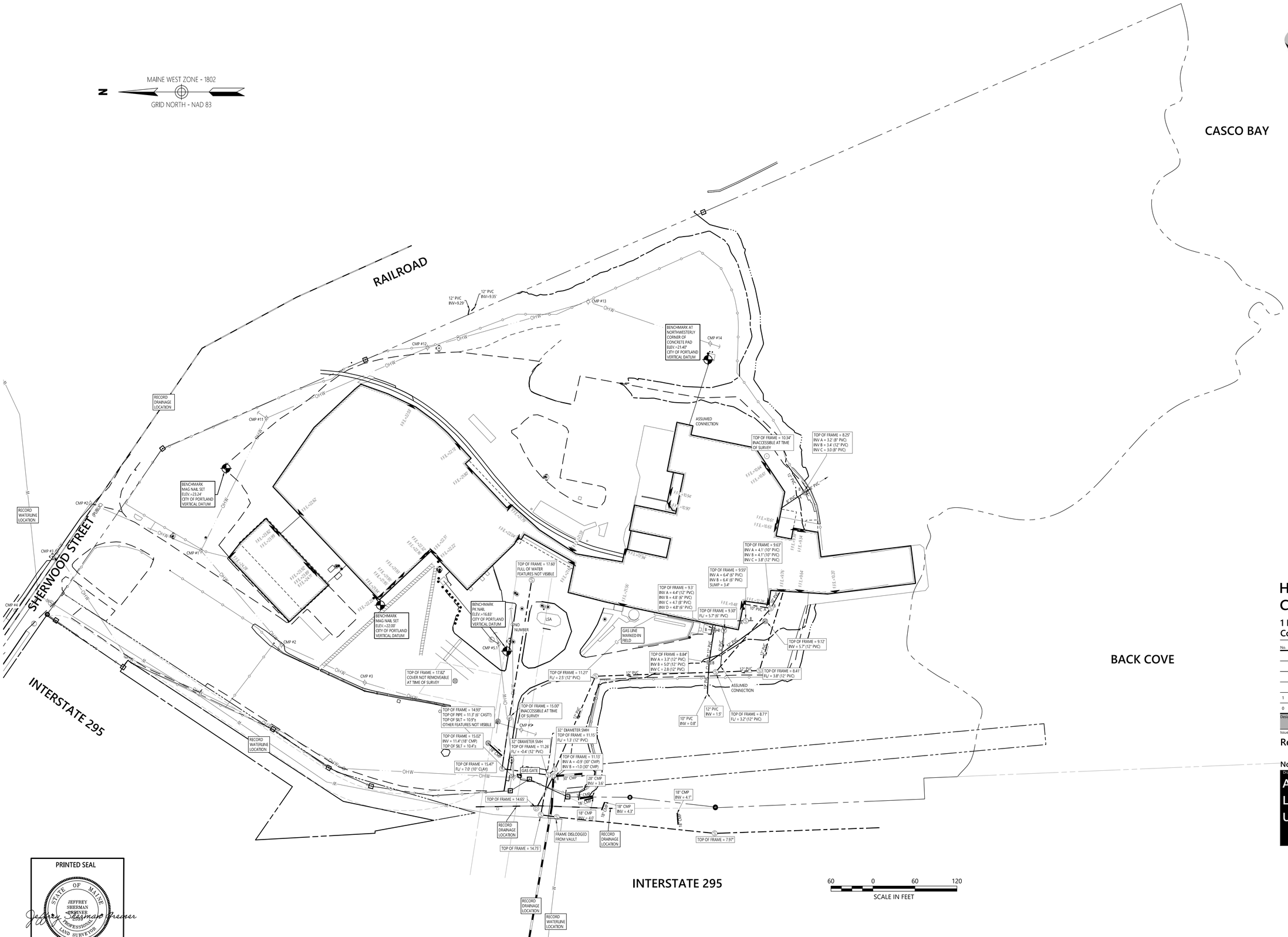
ATTEST:

_____ Registrar

Record Owner

HERITAGE ACQUISITION CORP.
4 GATEHOUSE DR. SUITE 110
PARSIPPANY, NJ 07054
PARCEL ID: 447 A001001
BOOK 14616 PAGE 50

Saved Monday, February 28, 2022 10:15:02 AM JGREINER Plotted Monday, February 28, 2022 10:17:10 AM Jeffrey Greiner


N
MAINE WEST ZONE - 1802
GRID NORTH - NAD 83
CASCO BAY
RAILROAD
SHERWOOD STREET
INTERSTATE 295
BACK COVE
INTERSTATE 295
RECORD DRAINAGE LOCATION
RECORD WATERLINE LOCATION
BENCHMARK MAG NAIL SET ELEV.=23.24' CITY OF PORTLAND VERTICAL DATUM
BENCHMARK MAG NAIL SET ELEV.=22.00' CITY OF PORTLAND VERTICAL DATUM
BENCHMARK AT NORTHWESTERLY CORNER OF CONCRETE PAD ELEV.=21.40' CITY OF PORTLAND VERTICAL DATUM
BENCHMARK PK NAIL ELEV.=16.83' CITY OF PORTLAND VERTICAL DATUM
ASSUMED CONNECTION
GAS LINE MARKED IN FIELD
GAS GATE
LSA
NO NUMBER
CMP #1
CMP #2
CMP #3
CMP #4
CMP #5
CMP #11
CMP #12
CMP #13
CMP #14
12" PVC INV=9.29'
12" PVC INV=9.35'
TOP OF FRAME = 17.82' COVER NOT REMOVEABLE AT TIME OF SURVEY
TOP OF FRAME = 14.99' TOP OF PIPE = 11.3' (6" CAST) TOP OF SILT = 10.9'± OTHER FEATURES NOT VISIBLE
TOP OF FRAME = 15.02' INV = 11.4' (18" CMP) TOP OF SILT = 10.4'±
TOP OF FRAME = 15.47' FL/ = 7.0' (10" CLAY)
TOP OF FRAME = 17.60' FULL OF WATER FEATURES NOT VISIBLE
TOP OF FRAME = 11.21' FL/ = 2.5' (12" PVC)
TOP OF FRAME = 15.00' INACCESSIBLE AT TIME OF SURVEY
32" DIAMETER SMH TOP OF FRAME = 11.15' FL/ = 1.3' (12" PVC)
32" DIAMETER SMH TOP OF FRAME = 11.26' FL/ = -0.4' (12" PVC)
TOP OF FRAME = 11.13' INV A = -0.9' (30" CMP) INV B = -1.0 (30" CMP)
TOP OF FRAME = 14.65'
TOP OF FRAME = 14.75'
TOP OF FRAME = 7.97'
TOP OF FRAME = 10.34' INACCESSIBLE AT TIME OF SURVEY
TOP OF FRAME = 8.25' INV A = 3.2' (8" PVC) INV B = 3.4' (12" PVC) INV C = 3.0 (8" PVC)
TOP OF FRAME = 9.63' INV A = 4.1' (10" PVC) INV B = 4.1' (10" PVC) INV C = 3.8' (12" PVC)
TOP OF FRAME = 9.55' INV A = 6.4' (6" PVC) INV B = 6.4' (6" PVC) SUMP = 3.4'
TOP OF FRAME = 9.3' INV A = 4.4' (12" PVC) INV B = 4.8' (6" PVC) INV C = 4.7' (8" PVC) INV D = 4.8' (6" PVC)
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TOP OF FRAME = 8.84' INV A = 3.3' (12" PVC) INV B = 5.0' (12" PVC) INV C = 2.8 (12" PVC)
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10" PVC INV = 0.8'
18" CMP INV = 4.1'
18" CMP INV = 4.5'
18" CMP INV = 4.6'
30" CMP
18" CMP INV = 3.6'
FRAME DISLODGED FROM VAULT
RECORD DRAINAGE LOCATION
RECORD WATERLINE LOCATION
F.F.E.=45.27'
F.F.E.=22.5'
F.F.E.=22.8'
F.F.E.=23.0'
F.F.E.=23.3'
F.F.E.=23.5'
F.F.E.=23.8'
F.F.E.=22.6'
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F.F.E.=23.8'
F.F.E.=23.0'
F.F.E.=23.3'
F.F.E.=23.5'
F.F.E.=23.8'
F.F.E.=23.0'
F.F.E.=23.2'
F.F.E.=23.5'
F.F.E.=23.7'
F.F.E.=23.9'
F.F.E.=23.1'
F.F.E.=23.4

Record Parcel Description

BEGINNING AT A 6-INCH BY 6-INCH GRANITE MONUMENT FOUND INSCRIBED "ECJ #356" MARKING THE SOUTHERLY SIDELINE OF SHERWOOD STREET WESTERLY SIDELINE OF SAID CANADIAN NATIONAL RAILROAD AND FURTHER DESCRIBED AS THE MOST NORTHEASTERLY CORNER OF DESCRIBED PARCEL;

THENCE, S 23-36-55 E, ALONG SAID RAILROAD 316.33 FEET TO A 6-LNCH BY 6-LNCH GRANITE MONUMENT FOUND INSCRIBED "ECJ 356";

THENCE, S 23-36-55 E, ALONG SAID RAILROAD, 526.90 FEET, TO A 4-INCH BY 4-INCH GRANITE MONUMENT WITH A DRILL HOLE;

THENCE, S 23•36•55 E, ALONG SAID RAILROAD, 745 FEET, MORE OR LESS TO THE LOW WATER MARK OF THE CASCO BAY;

THENCE, IN A GENERAL WESTERLY DIRECTION ALONG SAID LOW WATER LINE ABOUT 1,685 FEET TO A POINT ON THE EASTERLY SIDELINE OF INTERSTATE 295;

THENCE, N 2-23-50 W, ALONG SAID SIDELINE, 48 FEET, MORE OR LESS TO A POINT;

THENCE, S 87-30-10 W, ALONG SAID SIDELINE, 30.00 FEET TO A POINT;

THENCE, N 2•23•50 W, ALONG SAID SIDELINE, 61.46 FEET TO A DRILL HOLE FOUND, SAID DRILL HOLE LYING ON A TIE COURSE OF S 73-07-39 W, 878.87 FEET FROM THE PREVIOUS MENTIONED 4-INCH BY 4-INCH GRANITE MONUMENT WITH A DRILL HOLE;

THENCE, N 2-23-50 W, ALONG SAID SIDELINE, 237.87 FEET TO A 5/8 INCH RE-BAR FOUND CAPPED "ECJ #509";

THENCE, N 89-44-34 E, ALONG SAID SIDELINE, 1.05 FEET TO A 5/8 INCH RE-BAR FOUND CAPPED "ECJ #509";

THENCE, N 6-28-53 E, ALONG SAID SIDELINE, 122.88 FEET TO A 5/8 INCH RE-BAR FOUND CAPPED "ECJ #509";

THENCE, N 0•24•30 E, ALONG SAID SIDELINE, 88.91 FEET TO A 4-INCH BY 4-INCH GRANITE MONUMENT FOUND INSCRIBED "ECJ #509";

THENCE, N 24-48-04 E, ALONG SAID SIDELINE, 60.29 FEET TO A 6-INCH BY 6-INCH GRANITE HIGHWAY MONUMENT;

THENCE, N 31-29-16 W, ALONG SAID SIDELINE, 31.96 FEET TO A 4-INCH BY 4-INCH GRANITE MONUMENT INSCRIBED "ECJ #509";

THENCE, N 3•26•49 W, ALONG SAID SIDELINE, 111.10 FEET TO A 5/8 INCH RE-BAR FOUND CAPPED "ECJ #509";

THENCE, N 8-40-57 E, ALONG SAID SIDELINE, 89.05 FEET TO A 4-INCH BY 4-INCH GRANITE MONUMENT INSCRIBED "ECJ #509";

THENCE, N 23-15-05 E, ALONG SAID SIDELINE, 66.28 FEET TO A 4-INCH BY 4-LNCH GRANITE MONUMENT INSCRIBED "ECJ #509";

THENCE, N 34-47-28 E, ALONG SAID SIDELINE, 96.68 FEET TO A 4-LNCH BY 4-LNCH GRANITE MONUMENT INSCRIBED "ECJ #509";

THENCE, N 25-25-29 E, ALONG SAID SIDELINE, 160.02 FEET TO A 5/8 INCH RE-BAR FOUND CAPPED "ECJ #509";

THENCE, N 23-37-03 E, ALONG SAID SIDELINE, 63.03 FEET TO A 4-INCH BY 4-INCH GRANITE MONUMENT INSCRIBED "ECJ #509";

THENCE, N 39-23-04 E, ALONG SAID SIDELINE, 6.72 FEET TO A 6-INCH BY 6-INCH GRANITE MONUMENT FOUND INSCRIBED "ECJ #509";

THENCE, N 55-32-30 W, ALONG SAID SIDELINE, 11.67 FEET TO A 4-INCH BY 4-INCH GRANITE MONUMENT INSCRIBED "ECJ #509";

THENCE, N 34-47-50 E, ALONG SAID SIDELINE, 117.04 FEET TO A 4-INCH BY 4-INCH GRANITE MONUMENT INSCRIBED "ECJ #509";

THENCE, N 34-43-38 E, ALONG SAID SIDELINE, 15.02 FEET TO A 5/8 INCH RE-BAR FOUND CAPPED "ECJ #509" MARKING THE SOUTHERLY SIDELINE OF SHERWOOD STREET;

THENCE, S 55-12-08 E, ALONG SAID SHERWOOD STREET, 288.60 FEET TO THE POINT OF BEGINNING.

As-Surveyed Parcel Description

BEGINNING AT A GRANITE BOUND FOUND AT THE INTERSECTION OF THE SOUTHERLY SIDELINE OF SHERWOOD STREET AND THE WESTERLY SIDELINE OF LAND NOW OR FORMERLY OF THE STATE OF MAINE AS DESCRIBED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 25500, PAGE 215, AND BOOK 10924, PAGE 91 BEING FORMERLY OWNED BY THE ST. LAWRENCE & ATLANTIC RAILROAD COMPANY, IN PART, AND THE CANADIAN NATIONAL RAILWAY COMPANY, IN PART;

THENCE ALONG THE WESTERLY SIDELINE OF LAND OF THE STATE OF MAINE SOUTH 23°38'41" EAST FOR A DISTANCE OF 316.36 FEET TO A GRANITE BOUND FOUND;

THENCE CONTINUING ALONG LAND OF THE STATE OF MAINE SOUTH 23°34'45" EAST FOR A DISTANCE OF 526.95 FEET TO A GRANITE BOUND FOUND;

THENCE CONTINUING ALONG THE LAND OF THE STATE OF MAINE SOUTH 23°34'45" EAST FOR A DISTANCE OF 745 FEET, MORE OR LESS TO THE LOW WATER MARK OF CASCO BAY;

THENCE IN A GENERALLY WESTERLY DIRECTION ALONG THE LOW WATER LINE 1,720 FEET, MORE OR LESS, TO A POINT IN THE EASTERLY SIDELINE OF INTERSTATE 295;

THENCE ALONG THE EASTERLY SIDELINE OF INTERSTATE 295 THE FOLLOWING COURSES AND DISTANCES:

NORTH 2°23'38" WEST FOR A DISTANCE OF 48 FEET, MORE OR LESS TO A POINT;

SOUTH 87°36'22" WEST FOR A DISTANCE OF 30.00 FEET TO A POINT;

NORTH 2°23'38" WEST FOR A DISTANCE OF 61.46 FEET TO A POINT BEING LOCATED SOUTH 73°07'57" WEST AT A DISTANCE OF 878.66 FEET FROM A GRANITE BOUND FOUND ON THE WESTERLY SIDELINE OF LAND NOW OR FORMERLY OF THE STATE OF MAINE;

NORTH 2°23'38" WEST FOR A DISTANCE OF 237.87 FEET TO A POINT;

NORTH 89°44'46" EAST FOR A DISTANCE OF 1.05 FEET TO A REBAR FOUND;

NORTH 6°29'05" EAST FOR A DISTANCE OF 122.88 FEET TO A POINT;

NORTH 0°24'42" EAST FOR A DISTANCE OF 88.91 FEET TO A GRANITE BOUND FOUND;

NORTH 24°48'16" EAST FOR A DISTANCE OF 60.29 FEET TO A GRANITE BOUND FOUND;

NORTH 31°29'04" WEST FOR A DISTANCE OF 31.96 FEET TO A POINT;

NORTH 3°26'37" WEST FOR A DISTANCE OF 111.10 FEET TO A POINT;

NORTH 8°41'09" EAST FOR A DISTANCE OF 89.05 FEET TO A POINT;

NORTH 23°15'17" EAST FOR A DISTANCE OF 66.28 FEET TO A POINT;

NORTH 34°47'40" EAST FOR A DISTANCE OF 96.68 FEET TO A GRANITE BOUND FOUND;

NORTH 25°25'41" EAST FOR A DISTANCE OF 160.02 FEET TO A POINT;

NORTH 23°37'15" EAST FOR A DISTANCE OF 63.03 FEET TO A POINT;

NORTH 39°23'16" EAST FOR A DISTANCE OF 6.72 FEET TO A POINT;

NORTH 55°32'18" WEST FOR A DISTANCE OF 11.67 FEET TO A POINT;

NORTH 34°48'02" EAST FOR A DISTANCE OF 117.04 FEET TO A GRANITE BOUND FOUND;

NORTH 34°43'50" EAST FOR A DISTANCE OF 15.02 FEET TO A REBAR FOUND AT THE SOUTHERLY SIDELINE OF SHERWOOD STREET;

THENCE DEPARTING FROM THE EASTERLY SIDELINE OF INTERSTATE 295 AND RUNNING ALONG THE SOUTHERLY SIDELINE OF SHERWOOD STREET SOUTH 55°12'19" EAST FOR A DISTANCE OF 288.59 FEET TO THE POINT OF BEGINNING.

SAID AS-SURVEYED PARCEL CONTAINS A TOTAL AREA OF APPROXIMATELY 24.067 ACRES, MORE OR LESS (1,048,337 SQUARE FEET, MORE OR LESS), WITH AN AREA ABOVE MEAN HIGH WATER OF APPROXIMATELY 12.099 ACRES, MORE OR LESS (565,831 SQUARE FEET, MORE OR LESS).

Title Notes

REFERENCE SHOULD BE MADE TO CATIC
ALTA COMMITMENT FOR TITLE INSURANCE
FILE NO. 031521-01 DATE OF MARCH 16, 2021 AT 8:00 AM.

1. ANY DEFECT, LIEN, ENCUMBRANCE, ADVERSE CLAIM, OR OTHER MATTER THAT APPEARS FOR THE FIRST TIME IN THE PUBLIC RECORDS OR IS CREATED, ATTACHES, OR IS DISCLOSED BETWEEN THE COMMITMENT DATE AND THE DATE ON WHICH ALL OF THE SCHEDULE B, PART I—REQUIREMENTS ARE MET.
   NOT SURVEY RELATED

2. RIGHTS OR CLAIMS OF PERSONS IN POSSESSION, OTHER THAN THE INSURED, WHICH ARE NOT SHOWN BY THE PUBLIC RECORDS.
   NOT SURVEY RELATED

3. ANY EASEMENTS OR CLAIMS OF EASEMENTS NOT SHOWN BY THE PUBLIC RECORDS, BOUNDARY LINE DISPUTES, OVERLAPS, ENCROACHMENTS, TITLE TO FILLED LANDS (IF ANY) AND ALL OTHER FACTS WHICH AN ACCURATE SURVEY AND INSPECTION OF THE LAND WOULD DISCLOSE AND WHICH ARE NOT SHOWN BY THE PUBLIC RECORDS. WHEN THE POLICY ISSUED IS ON A FORM HAVING A REVISION DATE OF 6-17-06, THIS EXCEPTION ALSO REFERS TO ALL THOSE MATTERS DESCRIBED IN COVERED RISK 2(C).
   NOTED ON PLAN

4. UNRECORDED MECHANICS' LIENS.
   NOT SURVEY RELATED

5. REAL ESTATE TAXES, MUNICIPAL ASSESSMENTS AND PRIVATE ASSOCIATION ASSESSMENTS, IF ANY, INCLUDING LIENS AND ASSESSMENTS, NOT YET DUE AND PAYABLE.
   NOT SURVEY RELATED

6. THE EXACT ACREAGE OR SQUARE FOOTAGE OF THE LAND WILL NOT BE INSURED.
   NOTED ON PLAN

7. TITLE TO AND RIGHTS OF THE PUBLIC AND OTHERS ENTITLED THERETO IN AND TO THOSE PORTIONS OF THE INSURED PREMISES LYING WITHIN THE BOUNDS OF ADJACENT STREETS, ROADS AND WAYS.
   NOTED ON PLAN

8. RIGHTS OF THE TENANTS IN POSSESSION AT WILL OR UNDER UNRECORDED LEASES.
   NOTED ON PLAN

9. SUCH STATE OF FACTS INCLUDING NOTES DISCLOSED ON PLAN ENTITLED "ALTA/ACSM LAND TITLE SURVEY - URBAN, PILLSBURY - B&M PLANT, SHERWOOD STREET, PORTLAND, CUMBERLAND COUNTY, MAINE FOR B&G FOODS - PILLSBURY COMPANY BY OEST ASSOCIATES, INC. DATED FEBRUARY, 1999 LAST REVISED FEBRUARY 26, 1999, RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 199, PAGE 159.
   PERTINENT INFORMATION ON REFERENCED PLAN DEPICTED HEREON

10. RIGHTS AND EASEMENT SET FORTH IN EASEMENT DEED FROM BURNHAM & MORRILL COMPANY TO SARAH JORDAN AND ISABELLE JORDAN SAUNDERS DATED APRIL 18, 1912 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 891, PAGE 256.
    NOTED ON PLAN

11. AGREEMENT BY AND BETWEEN THE CITY OF PORTLAND AND BURNHAM AND MORRILL COMPANY DATED SEPTEMBER 16, 1940 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 1622, PAGE 134.
    NOTED ON PLAN

12. RIGHTS AND EASEMENTS GRANTED BY BURNHAM & MORRILL COMPANY TO CENTRAL MAINE POWER COMPANY AND NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY BY INSTRUMENT DATED JULY 14, 1948 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 1989, PAGE 88.
    NOTED ON PLAN

13. RIGHTS AND EASEMENTS GRANTED BY BURNHAM & MORRILL COMPANY TO CENTRAL MAINE POWER COMPANY AND NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY BY INSTRUMENT DATED JULY 5, 1951 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 2053, PAGE 394.
    NOTED ON PLAN

14. NOTICE OF TAKING BY THE MAINE STATE HIGHWAY COMMISSION DATED AUGUST 12, 1953 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 2146, PAGE 400, AS AFFECTED BY:
    a. QUITCLAIM DEED WITH COVENANT GRANTED BY BURNHAM AND MORRILL COMPANY TO THE STATE OF MAINE DATED JULY 17, 1957 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 2369, PAGE 116.
       NON-LOCUS; NOTED ON PLAN

15. RELEASE FROM THE STATE OF MAINE TO BURNHAM & MORRILL COMPANY DATED AUGUST 7, 1957 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 2368, PAGE 345.
    NOTED ON PLAN

16. LAYOUT AND NOTICE OF TAKING BY THE MAINE STATE HIGHWAY COMMISSION DATED APRIL 30, 1958 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 2407, PAGE 418 AND RELATED RECEIPT OF CONFIRMATION OF TAKING BY BURNHAM & MORRILL COMPANY TO THE STATE OF MAINE DATED SEPTEMBER 11, 1960 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 2563, PAGE 202.
    NOTED ON PLAN

17. EASEMENT DEED GRANTED BY BURNHAM & MORRILL CO. TO THE CITY OF PORTLAND DATED MAY 6, 1959 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 2471, PAGE 218.
    NOTED ON PLAN

18. RIGHTS AND EASEMENTS GRANTED BY BURNHAM & MORRILL COMPANY TO CENTRAL MAINE POWER COMPANY AND NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY BY INSTRUMENT DATED MAY 1, 1959 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 2491, PAGE 45.
    NOTED ON PLAN

19. RIGHTS AND EASEMENTS GRANTED BY GEORGE C. SEYBOLT, MELVILLE CHAPIN, AND RICHARD P. CHAPMAN, TRUSTEES UNDER A DECLARATION OF TRUST DATED MAY 31, 1966 TO CENTRAL MAINE POWER COMPANY AND NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY BY INSTRUMENT DATED MARCH 4, 1969 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 3091, PAGE 18.
    NOTED ON PLAN

20. RIGHTS, EASEMENTS, TERMS AND CONDITIONS SET FORTH IN EASEMENT DEED GRANTED BY GEORGE C. SEYBOLT, MELVILLE CHAPIN, AND RICHARD CHAPMAN, TRUSTEES UNDER A DECLARATION OF TRUST FOR THE BENEFIT OF WILLIAM UNDERWOOD COMPANY DATED MAY 31, 1966, TO PORTLAND WATER DISTRICT DATED OCTOBER 26, 1977 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 4124, PAGE 320.
    NOTED ON PLAN

21. RIGHTS, EASEMENTS, TERMS AND CONDITIONS SET FORTH IN EASEMENT DEED FROM GEORGE C. SEYBOLT, MELVILLE CHAPIN, AND RICHARD CHAPMAN, TRUSTEES UNDER A DECLARATION OF TRUST FOR THE BENEFIT OF WILLIAM UNDERWOOD COMPANY DATED MAY 31, 1966 TO PORTLAND WATER DISTRICT DATED DECEMBER 20, 1978 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 4360, PAGE 171.
    NOTED ON PLAN

22. NOTICE OF LAYOUT AND TAKING BY THE STATE OF MAINE BY ITS DEPARTMENT OF TRANSPORTATION DATED SEPTEMBER 3, 1985 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 6897, PAGE 226.
    NOTED ON PLAN

23. RIGHTS AND EASEMENT GRANTED BY BURNHAM & MORRILL CO. A DIVISION OF PET INC. TO CENTRAL MAINE POWER COMPANY BY INSTRUMENT DATED OCTOBER 31, 1986 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 7708, PAGE 219.
    NOTED ON PLAN

24. RIGHTS AND EASEMENTS GRANTED BY P.E.T. INCORPORATED TO CENTRAL MAINE POWER COMPANY AND NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY, BY INSTRUMENT DATED OCTOBER 22, 1991 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 9777, PAGE 330.
    NOTED ON PLAN

25. RIGHTS AND EASEMENTS GRANTED BY HERITAGE ACQUISITION CORP. TO CENTRAL MAINE POWER COMPANY AND VERIZON NEW ENGLAND, INC. BY INSTRUMENT DATED FEBRUARY 7, 2006 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 24049, PAGE 189.
    NOTED ON PLAN

26. TITLE TO AND THE RIGHTS OF OTHERS IN AND TO THE LAND LYING BELOW THE MEAN HIGH WATER MARK.
    NOTED ON PLAN

27. RIGHTS OF THE PUBLIC UNDER THE COLONIAL ORDINANCE OF 1641-1647 AND THE FEDERAL NAVIGATIONAL SERVITUDE TO THAT PORTION OF THE PREMISES THAT LIES BELOW THE HIGH WATER MARK.
    NOTED ON PLAN

28. CLAIMS THAT SOME PORTION OF SAID LAND HAS BEEN CREATED BY ARTIFICIAL MEANS, OR HAS ACCRETED TO SUCH PORTION SO CREATED.
    NOT SURVEY RELATED

29. CLAIMS THAT SOME PORTION OF SAID LAND HAS BEEN BROUGHT WITHIN THE BOUNDARIES THEREOF BY AVULSIVE MOVEMENT OR HAS BEEN FORMED BY ACCRETION TO ANY SUCH PORTION.
    NOT SURVEY RELATED

30. OWNERSHIP RIGHTS OF THE STATE OF MAINE IN SO MUCH OF THE PREMISES AS LIES BELOW THE MEAN LOW WATER MARK AS SHOWN ON THE PLAN.
    NOTED ON PLAN

31. TERMS AND PROVISIONS CREATING A PORTION OF THE INSURED ESTATE AS EVIDENCED BY A SUBMERGED LANDS LEASE BY AND BETWEEN THE BUREAU OF PARKS AND LAND, AS AGENCY FOR THE STATE OF MAINE DEPARTMENT OF CONSERVATION, AS LANDLORD AND HERITAGE ACQUISITION CORPORATION, AS TENANT, DATED MARCH 29, 2006.
    UNABLE TO PLOT

vhb.com
vhb
500 Southborough Drive
Suite 105B
South Portland, ME 04106
207.889.3150

Heritage Acquisition Corp.

1 Bean Pot Circle, City of Portland
County of Cumberland, State of Maine

No.	Revision	Date	Appvd.
1	Update Certification	2/28/2022	JSG
0	Client Comments	2/21/2022	JSG

Designed by | Checked by

Issued for: **Review**
Date: **June 30, 2021**

Not Issued For Construction

Drawing Title:
ALTA/NSPS Land Title Survey Descriptions & Title Notes

Drawing Number:
Sv-3

Sheet 3 of 3

Project Number:
58570.00

Saved Monday, February 28, 2022 10:15:02 AM JGRENER Plotted Monday, February 28, 2022 10:15:52 AM Jeffrey Greiner

NOTES:
1. SEE LANDSCAPE PLANS FOR SITE SURFACE MATERIAL ASSOCIATED WITH LANDSCAPED AREAS, PATIOS, AND NON-BITUMINOUS WALKWAYS & ROADWAYS, PLANTING PLANS AND SITE FURNISHINGS.
2. UTILITY AND DRAINAGE STRUCTURES NOT SHOWN FOR CLARITY, SEE GRADING AND DRAINAGE AND UTILITY PLAN FOR MORE INFORMATION.
3. REFER TO SHEET C-304 FOR LINE AND CURVE LAYOUT DATA.

REFER TO CIVIL PLANS BY VHB FOR SHERWOOD STREET DESIGN
CONCRETE SIDEWALK, TYP.
PEDESTRIAN RAMP, TYP.
BIKE LANE STRIPING PER CITY OF PORTLAND TECHNICAL MANUAL
DOUBLE YELLOW CENTERLINE STRIPE, TYP.
FLUSH GRANITE CURB, TYP.
CROSSWALK, TYP.
VERTICAL GRANITE CURB, TYP.
PWD SEWER EASEMENT
STOP SIGN, TYP.
STOP BAR, TYP.
LIMIT OF WORK
PROPERTY BOUNDARY, TYP.
4" LOAM & SEED, TYP.
SIDEWALK RAMP DETECTABLE WARNING, TYP.
STOP SIGN, TYP.
STOP BAR, TYP.
CONCRETE PAD, TYP.
CONCRETE SIDEWALK, TYP.
PWD SEWER EASEMENT
BITUMINOUS PAVEMENT, TYP.
TIPDOWN, TYP.
FLUSH GRANITE CURB, TYP.
STOP BAR, TYP.
STOP SIGN, TYP.
VEHICULAR PRECAST CONCRETE PAVERS, TYP. SEE LANDSCAPE PLANS
TREE, TYP. SEE LANDSCAPE PLANS
DO NOT ENTER SIGN, TYP.
5'X8' STANDARD PAD-MOUNTED BUS SHELTER (2) MIN 2'-8" OPENING FOR EACH
ONE WAY AND ROUNDABOUT SIGN, TYP.
TIMBER GUARDRAIL, TYP. SEE LANDSCAPE PLANS
4" LOAM & SEED, TYP.
ARCHITECTURAL CONCRETE RETAINING WALL, SEE STRUCTURAL PLANS
VEHICULAR ASPHALT PAVING, TYP. SEE LANDSCAPE PLANS
ACCESSIBLE PARKING SPACE, TYP.
ONE WAY SIGN, TYP.
4" LOAM & SEED, TYP.
CURB STOP, TYP.
ACCESSIBLE PARKING SPACE SIGN (MUTCD R7-8), TYP. AT MARKED ACCESSIBLE SPACES
MOUNTABLE GRANITE CURB, TYP.
BIKE RACK, TYP. SEE LANDSCAPE PLANS
PARKING GARAGE
MATCHLINE SEE INSET A, SHT. C-303
MATCHLINE SEE SHEET C-102
MATCHLINE SEE SHEET C-102

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

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

Woodard & Curran

LAND-USE PERMIT SET

NOT FOR CONSTRUCTION

Number	Revision	Date

STATE OF MAINE
AMY N. LEBEL
17065
LICENSED PROFESSIONAL ENGINEER

Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 OCTOBER 2023
Scale	1"=20'

Drawing Title
SITE LAYOUT PLAN - 1

C-101

MATCHLINE SEE SHEET C-101

MATCHLINE SEE SHEET C-101

PARKING GARAGE

DAY CARE CENTER

BEAN BUILDING

LEARNING RESEARCH & COLLABORATION BUILDING

MATCHLINE SEE INSET A, SHT. C-303

MATCHLINE SEE INSET B, SHT. C-303

DO NOT ENTER SIGN, TYP.

ONE WAY AND ROUNDABOUT SIGN, TYP.

ONE WAY SIGN, TYP.

PEDESTRIAN RAMP, TYP.

CROSSWALK, TYP.

AUTHORIZED VEHICLES ONLY SIGN, TYP.

ACCESSIBLE PARKING SPACE, TYP.

SIDEWALK RAMP DETECTABLE WARNING, TYP.

VEHICULAR GATE WITH KNOX LOCKBOX, TYP.

CURB STOP, TYP.

ACCESSIBLE PARKING SPACE SIGN (MUTCD R7-8), TYP. AT MARKED ACCESSIBLE SPACES

FLUSH GRANITE CURB, TYP.

VERTICAL GRANITE CURB, TYP.

BITUMINOUS PAVEMENT, TYP.

CONCRETE SIDEWALK, TYP.

TIPDOWN, TYP.

PEDESTRIAN GATE, TYP.

FENCE, TYP.

PWD SEWER EASEMENT

BENCH, TYP. SEE LANDSCAPE PLANS

TREE, TYP. SEE LANDSCAPE PLANS

BIKE RACK, TYP. SEE LANDSCAPE PLANS

STAIR, TYP. SEE LANDSCAPE PLANS

VEHICULAR GRANITE PAVERS, TYP. SEE LANDSCAPE PLANS

BOLLARD, TYP. SEE LANDSCAPE PLANS

GRANITE COBBLESTONE PAVERS, TYP. SEE LANDSCAPE PLANS

VEHICULAR CONCRETE PAVEMENT, TYP. SEE LANDSCAPE PLANS

4" LOAM & SEED, TYP.

VEHICULAR GRANITE PAVERS, TYP. SEE LANDSCAPE PLANS

MOUNTABLE GRANITE CURB, TYP.

RAMP TO LOADING DOCK

VEHICULAR ASPHALT PAVING, TYP. SEE LANDSCAPE PLANS

TIMBER GUARDRAIL, TYP., SEE LANDSCAPE PLANS

ARCHITECTURAL CONCRETE RETAINING WALL, TYP.

ROOF OVERHANG, TYP.

PROPERTY BOUNDARY, TYP.

LIMIT OF WORK, TYP.

STONE RETAINING WALL, TYP. SEE LANDSCAPE PLANS

VEHICULAR GRANITE PAVERS, TYP. SEE LANDSCAPE PLANS

EXISTING PIERS

APPROXIMATE FLOOD ZONE LINE BY ELEVATION

MEAN TIDE (0)

ZONE AE (EL. 9)

INTERTIDAL ZONE

HAT (7.39')

Mhhw (6.30') BY MODEL

MLLW (0.00')

SEE LANDSCAPE PLANS FOR ROOF LANDSCAPING

ROOF OVERHANG

VEHICULAR PRECAST CONCRETE PAVERS, TYP. SEE LANDSCAPE PLANS

ARCHITECTURAL CONCRETE RETAINING WALL, TYP. SEE LANDSCAPE PLANS

STAIR, TYP. SEE LANDSCAPE PLANS

SEE LANDSCAPE PLAN FOR MORE DETAIL ON SURFACE MATERIALS

APPROXIMATE FLOOD ZONE LINE BY ELEVATION (EL. 9)

APPROXIMATE FEMA FLOOD ZONE LINE

STONE RETAINING WALL, TYP. SEE LANDSCAPE PLANS

NOTES:
1. REFER TO SHEET C-101 FOR GENERAL SITE LAYOUT PLAN NOTES.
2. REFER TO SHEET C-304 FOR LINE AND CURVE LAYOUT DATA.

20' 0 20' 40'
BAR SCALE
1" = 20'
CHECK GRAPHIC SCALE BEFORE USING

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
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Woodard & Curran

LAND-USE PERMIT SET

NOT FOR CONSTRUCTION

Number	Revision	Date

STATE OF MAINE
AMY N. LEBEL
17065
LICENSED
PROFESSIONAL ENGINEER

Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 OCTOBER 2023
Scale	1"=20'

Drawing Title
SITE LAYOUT PLAN - 2

C-102

Attachment 1B

Site Location Map

SITE LOCATION MAP



The Maine Department of Transportation provides this publication for information only. Reliance upon this information is at user risk. It is subject to revision and may be incomplete depending upon changing conditions. The Department assumes no liability if injuries or damages result from this information. This map is not intended to support emergency dispatch.

0.1 Miles

1 inch = 0.08 miles

Date: 11/3/2023
Time: 9:09:53 AM

Attachment 1C

Trip Generation Calculations

Trip Generation - Opening + 5 Years program

Total Site generated trips (not accounting for internal, pass-by, or diverted trips)

Site Land Uses and Descriptions				WEEKDAY 24-HOUR TRIP GENERATION								HOURLY TRIP GENERATION																							
				average				regression		# trips																											
Code	Land Use	Size	Unit	# studies	Avg Rate	Std Dev.	Total by Avg	r^2	total by Eq'n	Method Chosen	Total Trips	Dir	12am	1am	2am	3am	4am	5am	6am	7am	**8am**	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	**5pm**	6pm	7pm	8pm	9pm	10pm	11pm
	Graduate Students	3123																																	
	AM Users, Daily On Campus	537								Custom	1074	Enter	0	0	0	0	0	0	0	54	**134**	107	134	107	0	0	0	0	161	**282**	161	81	81	40	0	0
	PM Users, Daily On Campus	806								Custom	1611	Exit	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	54	134	161	**161**	148	121	121	282	161	0
												Enter	0	0	0	0	0	0	0	10	**20**	40	20	10	0	0	0	0	0	**0**	0	0	0	0	0	0
	Affiliated Users	100								Custom	200	Exit	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	0	10	20	**40**	20	10	0	0	0	0
	Special Events	150																																	
	Workday Events	25								Custom	50																									
	Lunch Events	25								Custom	50	Enter	0	0	0	0	0	0	0	5	**15**	5	0	20	5	0	0	0	10	**50**	40	0	0	0	0	0
	Night Events	100								Custom	200	Exit	0	0	0	0	0	0	0	0	**0**	0	0	0	0	5	20	0	5	**15**	25	50	30	0	0	0
710	General Office																																		
	Embedded Startups	100	Employees																																
	Faculty, staff, and researchers	225	Employees									Enter	1	0	0	0	1	3	35	98	**103**	45	40	43	73	65	60	53	39	**29**	12	6	5	4	2	3
	Signature Partners	64	Employees	52	3.33	1.44	1295	0.86	1440	regression	1440	Exit	1	1	0	1	1	1	4	14	**24**	32	43	74	73	48	47	60	109	**114**	19	17	9	12	15	2
												Enter	0	0	0	0	0	0	0	3	**8**	6	8	6	0	0	0	0	9	**16**	9	5	5	2	0	0
	Academic Faculty		:mployees							Custom	150	Exit	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	3	8	9	**9**	8	7	7	16	9	0
												Enter	0	0	0	0	0	1	6	20	**13**	6	3	3	2	3	4	8	14	**17**	2	0	0	0	0	0
565	Day Care Center	50	Child Capacity	14	4.09	1.21	205	0.72	225	average	205	Exit	0	0	0	0	0	0	4	17	**13**	5	3	3	3	3	5	7	14	**19**	7	0	0	0	0	0
												Enter	2	0	1	1	1	3	7	12	**15**	17	24	52	53	28	17	14	27	**44**	43	31	18	11	6	2
932	High Turnover (Sit-Down) Restaurant	8	1k sf GFA	50	107.20	66.72	858	n/a	n/a	average	858	Exit	3	1	1	2	1	1	4	8	**13**	15	19	30	53	48	22	17	17	**29**	37	39	30	21	12	6
												total	7	2	2	3	5	9	60	240	**359**	277	293	348	262	200	231	311	595	**825**	532	366	306	387	206	13
												enter	3	0	1	1	2	7	48	201	**308**	226	228	241	134	96	81	74	260	**437**	268	122	109	57	8	5
												exit	4	2	1	2	3	2	12	39	**51**	51	65	106	128	104	150	236	336	**387**	264	244	197	330	198	8

Trip Generation - Opening + 5 Years program

Total Site generated trips (not accounting for internal, pass-by, or diverted tr

Site Land Uses and Descriptions			
Code	Land Use	Size	Unit
	Graduate Students	3123	
	AM Users, Daily On Campus	537	
	PM Users, Daily On Campus	806	
	Affiliated Users	100	
	Special Events	150	
	Workday Events	25	
	Lunch Events	25	
	Night Events	100	
710	General Office		
	Embedded Startups	100	Employees
	Faculty, staff, and researchers	225	Employees
	Signature Partners	64	Employees
	Academic Faculty	75	Employees
565	Day Care Center	50	Child Capacity
932	High Turnover (Sit-Down) Restaurant	8	1k sf GFA

AM PEAK HOUR DETAIL									
AM PEAK HOUR	8am		Auto		Transit		Bike/Walk	
All Trips	On-Site Ped Trips	External Trips	Mode Share	Trips	Mode Share	Trips	Mode Share	Trips
134	**9**	**125**	**80%**	**100**	**10%**	**13**	**10%**	**13**
0	0	**0**	80%	**0**	10%	**0**	10%	0
20	**0**	**20**	90%	**18**	5%	**1**	5%	**1**
0	0	**0**	90%	**0**	5%	**0**	5%	0
15	**0**	**15**	90%	**14**	5%	**1**	5%	**1**
0	0	**0**	90%	**0**	5%	**0**	5%	0
103	**17**	**86**	**90%**	**77**	**5%**	**4**	**5%**	**4**
24	17	**7**	90%	**7**	5%	**0**	5%	0
8	**0**	**8**	**90%**	**7**	**5%**	**0**	**5%**	**0**
0	0	**0**	90%	**0**	5%	**0**	5%	0
13	**0**	**13**	90%	**12**	5%	**1**	5%	**1**
13	10	**3**	90%	**2**	5%	**0**	5%	0
15	**15**	**0**	90%	**0**	5%	**0**	5%	**0**
13	13	**0**	90%	**0**	5%	**0**	5%	0

PM PEAK HOUR DETAIL									
PM PEAK HOUR	5pm		Auto		Transit		Bike/Walk	
All Trips	On-Site Ped Trips	External Trips	Mode Share	Trips	Mode Share	Trips	Mode Share	Trips
282	**26**	**256**	**80%**	**205**	**10%**	**26**	**10%**	**26**
161	25	**136**	80%	109	10%	14	10%	14
0	**0**	**0**	90%	**0**	5%	**0**	5%	**0**
40	0	**40**	90%	36	5%	2	5%	2
50	**0**	**50**	90%	**45**	5%	**3**	5%	**3**
15	0	**15**	90%	14	5%	1	5%	1
29	**17**	**11**	**90%**	**10**	**5%**	**1**	**5%**	**1**
114	47	**67**	90%	60	5%	3	5%	3
16	**0**	**16**	**90%**	**14**	**5%**	**1**	**5%**	**1**
9	0	**9**	90%	8	5%	0	5%	0
17	**14**	**3**	90%	**3**	5%	**0**	5%	**0**
19	0	**19**	90%	17	5%	1	5%	1
44	**44**	**0**	90%	**0**	5%	**0**	5%	**0**
29	29	**0**	90%	0	5%	0	5%	0

AM Peak Hour (8am)					
All Trips	On-Site Ped	Bike/Ped	Transit	Vehicle	
308	41	20	20	227	Enter
51	41	0	0	10	Exit
359	82	20	20	237	Total

PM Peak Hour (5pm)					
All Trips	On-Site Ped	Bike/Ped	Transit	Vehicle	
437	101	30	30	276	Enter
388	101	21	21	245	Exit
825	202	51	51	521	Total

AM PEAK HOUR ON-SITE PED

1. Origin/Destination Pairs Calculated as a % of Trips Entering Destination Use

Origin ↓ \ Destination →	Students	Affiliated Users	Special Events	Office	Day Care Center	Cafeteria
Students						0%
Affiliated Users						
Special Events						
Office						100%
Day Care Center						
Cafeteria						

2. Origin/Destination Pairs Calculated as a % of Trips Exiting Origin Use

Origin ↓ \ Destination →	Students	Affiliated Users	Special Events	Office	Day Care Center	Cafeteria
Students						
Affiliated Users						
Special Events						
Office	10%					
Day Care Center				80%		
Cafeteria	50%			50%		

PM PEAK HOUR ON-SITE PED

1. Origin/Destination Pairs Calculated as a % of Trips Entering Destination Use

Origin ↓ \ Destination →	Students	Affiliated Users	Special Events	Office	Day Care Center	Cafeteria
Students				10%		50%
Affiliated Users						
Special Events						
Office					80%	50%
Day Care Center						
Cafeteria						

2. Origin/Destination Pairs Calculated as a % of Trips Exiting Origin Use

Origin ↓ \ Destination →	Students	Affiliated Users	Special Events	Office	Day Care Center	Cafeteria
Students						
Affiliated Users						
Special Events						
Office	10%					
Day Care Center						
Cafeteria	50%			50%		

CALCULATED ON-SITE PED TRIPS

AM PEAK HOUR

Total Exit	Origin ↓ \ Destination →	Total Entering: 134 Students	20 Affiliated Users	15 Special Events	103 Office	13 Day Care Center	15 Cafeteria
0	Students						
0	Affiliated Users						
0	Special Events						
24	Office	2					15
13	Day Care Center				10		
13	Cafeteria	7			7		

PM PEAK HOUR

Total Exit	Origin ↓ \ Destination →	Total Entering: 282 Students	0 Affiliated Users	50 Special Events	29 Office	17 Day Care Center	44 Cafeteria
161	Students				3		22
40	Affiliated Users						
15	Special Events						
114	Office	11				14	22
19	Day Care Center						
29	Cafeteria	15			15		

Hourly Distribution of Entering and Exiting Trips, as a % of 24-hour trips

Land Use or User	Students (Day Users)		Students (Night Users)		Affiliated Users		Special Events (Day)		Special Events (Lunch)		Special Events (Night)		Day Care		General Office		Cafeteria	
ITE or Custom	Custom		Custom		Custom		Custom		Custom		Custom		ITE 565		ITE 710		ITE 932	
Time	Entering	Exiting	Entering	Exiting	Entering	Exiting	Entering	Exiting	Entering	Exiting	Entering	Exiting	Entering	Exiting	Entering	Exiting	Entering	Exiting
12:00 - 1:00 AM															0.2%	0.1%	0.4%	0.7%
1:00 - 2:00 AM															0.0%	0.1%	0.1%	0.3%
2:00 - 3:00 AM															0.0%	0.0%	0.3%	0.2%
3:00 - 4:00 AM															0.0%	0.1%	0.2%	0.4%
4:00 - 5:00 AM															0.2%	0.2%	0.2%	0.3%
5:00 - 6:00 AM													1.0%	0.2%	0.4%	0.1%	0.7%	0.2%
6:00 - 7:00 AM													6.3%	4.3%	4.8%	0.5%	1.7%	0.9%
7:00 - 8:00 AM	10.0%				10.0%		20.0%						19.5%	16.3%	13.6%	2.0%	2.7%	1.8%
8:00 - 9:00 AM	25.0%				20.0%		60.0%						13.2%	12.8%	14.3%	3.4%	3.4%	3.1%
9:00 - 10:00 AM	20.0%				40.0%		20.0%						5.4%	4.6%	6.3%	4.4%	4.0%	3.4%
10:00 - 11:00 AM	25.0%				20.0%								2.6%	2.9%	5.5%	6.0%	5.5%	4.4%
11:00 - 12:00 PM	20.0%				10.0%				80.0%				2.6%	2.6%	6.0%	10.3%	12.1%	6.9%
12:00 - 1:00 PM									20.0%				2.1%	2.6%	10.2%	10.1%	12.4%	12.3%
1:00 - 2:00 PM										20.0%			3.0%	3.2%	9.0%	6.6%	6.5%	11.2%
2:00 - 3:00 PM		10.0%								80.0%			4.1%	4.5%	8.3%	6.5%	4.0%	5.1%
3:00 - 4:00 PM		25.0%				10.0%							7.5%	6.9%	7.3%	8.4%	3.3%	4.0%
4:00 - 5:00 PM		30.0%	20.0%			20.0%		20.0%			10.0%		13.6%	14.0%	5.4%	15.2%	6.2%	3.9%
5:00 - 6:00 PM		30.0%	35.0%			40.0%		60.0%			50.0%		16.7%	18.7%	4.0%	15.8%	10.2%	6.8%
6:00 - 7:00 PM		5.0%	20.0%	15.0%		20.0%		20.0%			40.0%	20.0%	2.4%	6.4%	1.7%	2.6%	10.1%	8.7%
7:00 - 8:00 PM			10.0%	15.0%		10.0%						50.0%			0.9%	2.3%	7.2%	9.2%
8:00 - 9:00 PM			10.0%	15.0%								30.0%			0.7%	1.3%	4.3%	7.1%
9:00 - 10:00 PM			5.0%	35.0%											0.5%	1.6%	2.6%	4.8%
10:00 - 11:00 PM				20.0%											0.3%	2.1%	1.4%	2.9%
11:00 - 12:00 AM															0.4%	0.3%	0.5%	1.4%

Attachment 1D

Trip Distribution
Project Generated Trips
Figures

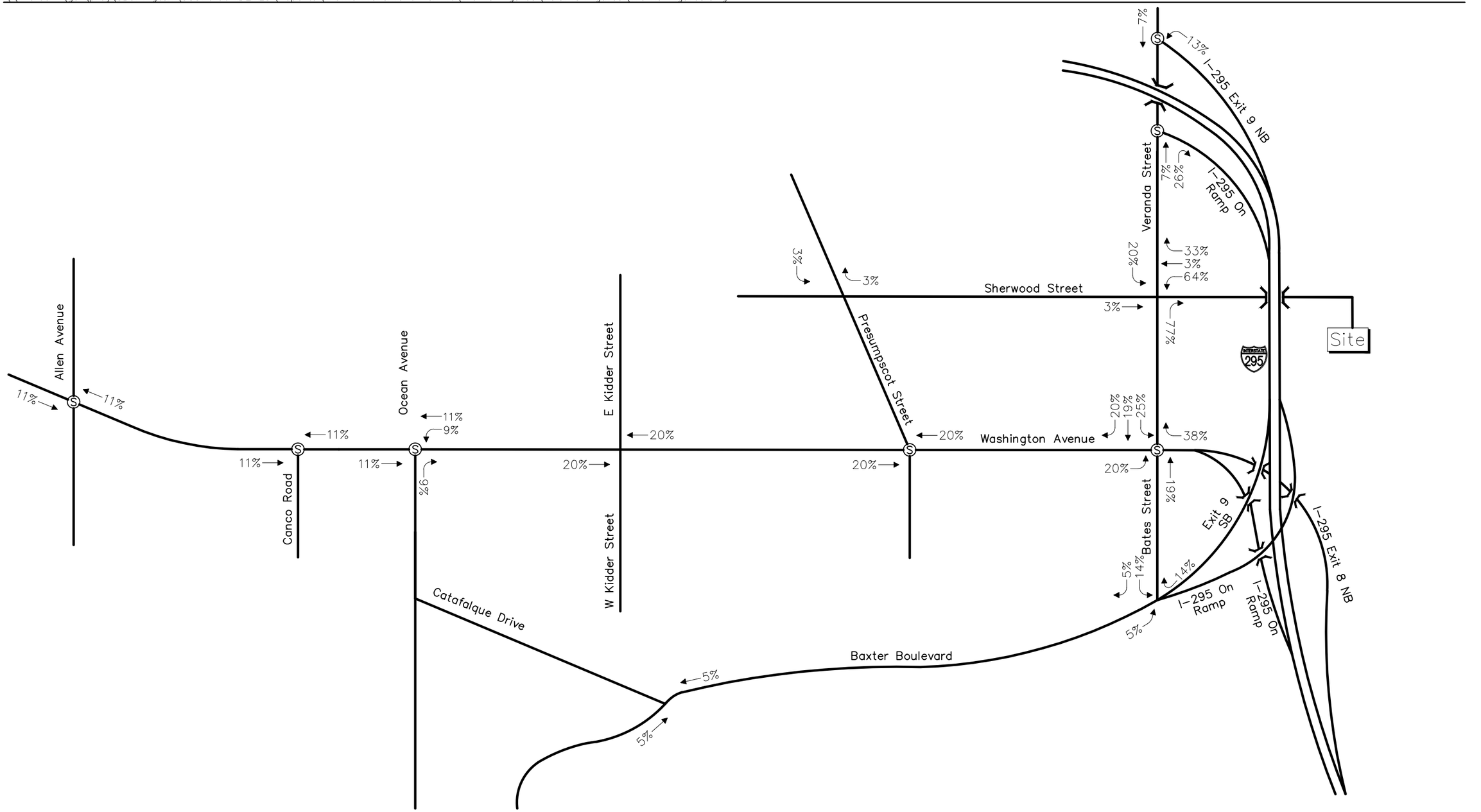
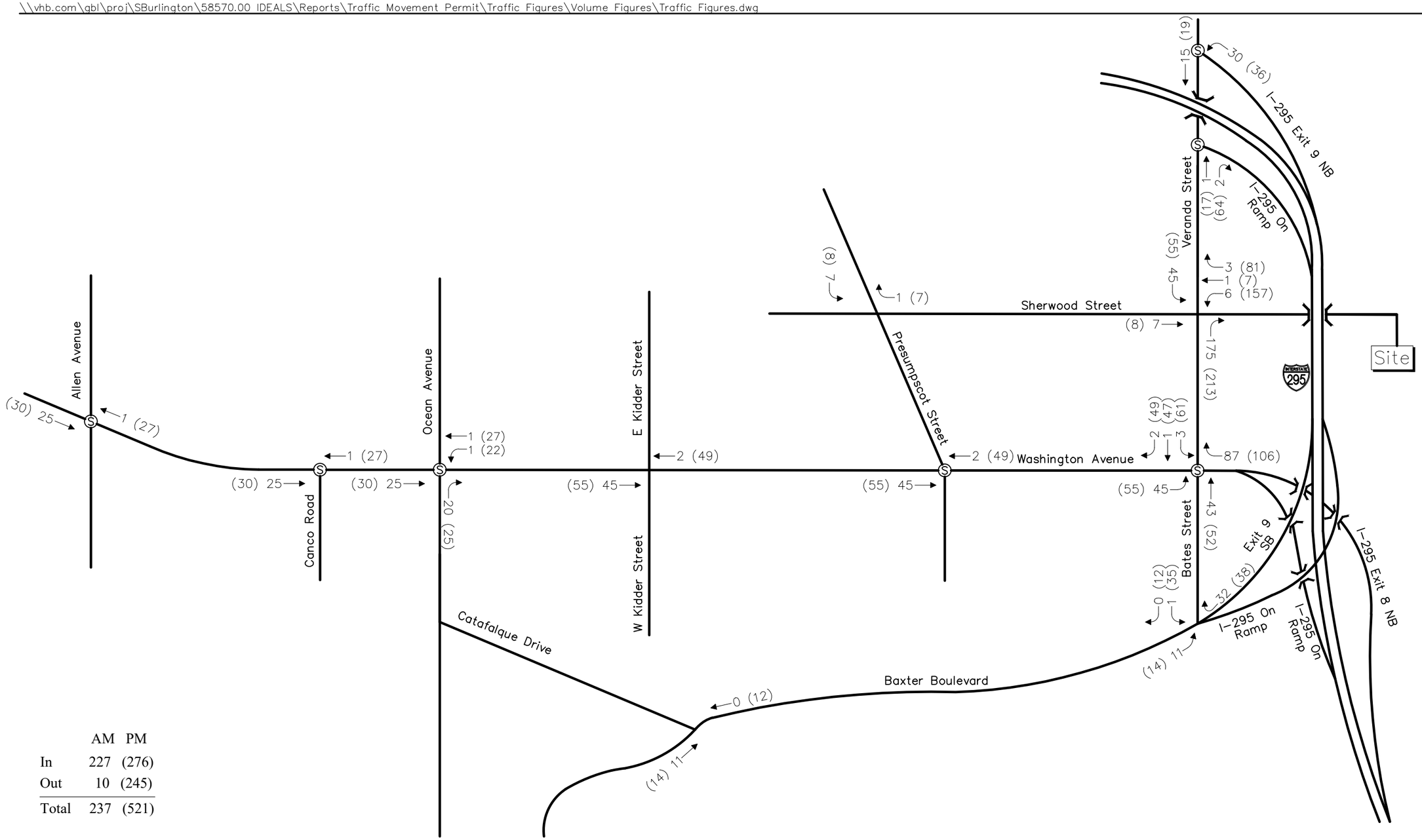


Figure 1
Trip Distribution



	AM	PM
In	227	(276)
Out	10	(245)
Total	237	(521)

Not to Scale

Figure 2
Site Generated Trips

2

Section 2: Traffic Crashes

2.A Crash Summary Data

VHB obtained the crash data from MaineDOT for the period 2020-2022, the most recent three-year period available.

In order to evaluate whether a location has a crash problem, MaineDOT uses two criteria to define a High Crash Location (HCL). Both criteria must be met in order to be classified as an HCL.

1. A critical rate factor (CRF) of 1.00 or more for a three-year period. A CRF compares the actual crash rate to the rate for similar intersections in the state. A CRF of less than 1.00 indicated a rate of less than average and:
2. A minimum of eight crashes over the same three-year period

Based on the crash data provided by MaineDOT, there are four HCLs in the site vicinity.

The crash information for the intersections in the site vicinity is provided in Attachment 2.

Table 5 High Crash Locations

Location	Total (CRF)	Crash Severity		
		Fatal	Injury	PDO
Ocean Ave from Catafalque Dr to Washington Ave	9 (1.90)	0	1	7
Washington Ave from Galvin St to Bates St	8 (1.15)	0	3	5
Washington Ave from Presumpscot St to Cummings	9 (1.15)	0	2	6
Washington Ave from Ocean Ave to Byfield Rd	12 (1.59)	0	3	9

It is important to note that the intersection of Veranda Street / I-295 SB Ramp / Wordsworth Street (Node 60334) is also identified as an HCL during the 2020-2022 period with a total of 10 crashes and a CRF of 4.75. This intersection was part of The Veranda Plan and has been recently reconstructed. MaineDOT has informed VHB that an HCL diagram will not be provided for this intersection until all crashes are current for 2023-2025.

Locations that experienced 8 or more crashes however are not considered high crash locations are listed below:

Intersections:

- Bates Street / Veranda Street / Washington Aveune (17 Crashes / CRF = 0.52)
- Ocean Avenue / Washington Avenue (21 Crashes / CRF = 0.82)
- Presumpscot Street / Washington Avenue (16 Crashes / CRF = 0.57)

Although these locations are not considered high crash locations, they are all located in the projected study area and will be further investigated in the Traffic Impact Study.

2.B Bicycle and Pedestrian Crashes

There have been 8 crashes involving bicycles and 0 crashes involving pedestrians in the past three years in the vicinity of the site. Five of the bicycle crashes were located at intersections, 2 were located at a driveway, and one was on a straight road.

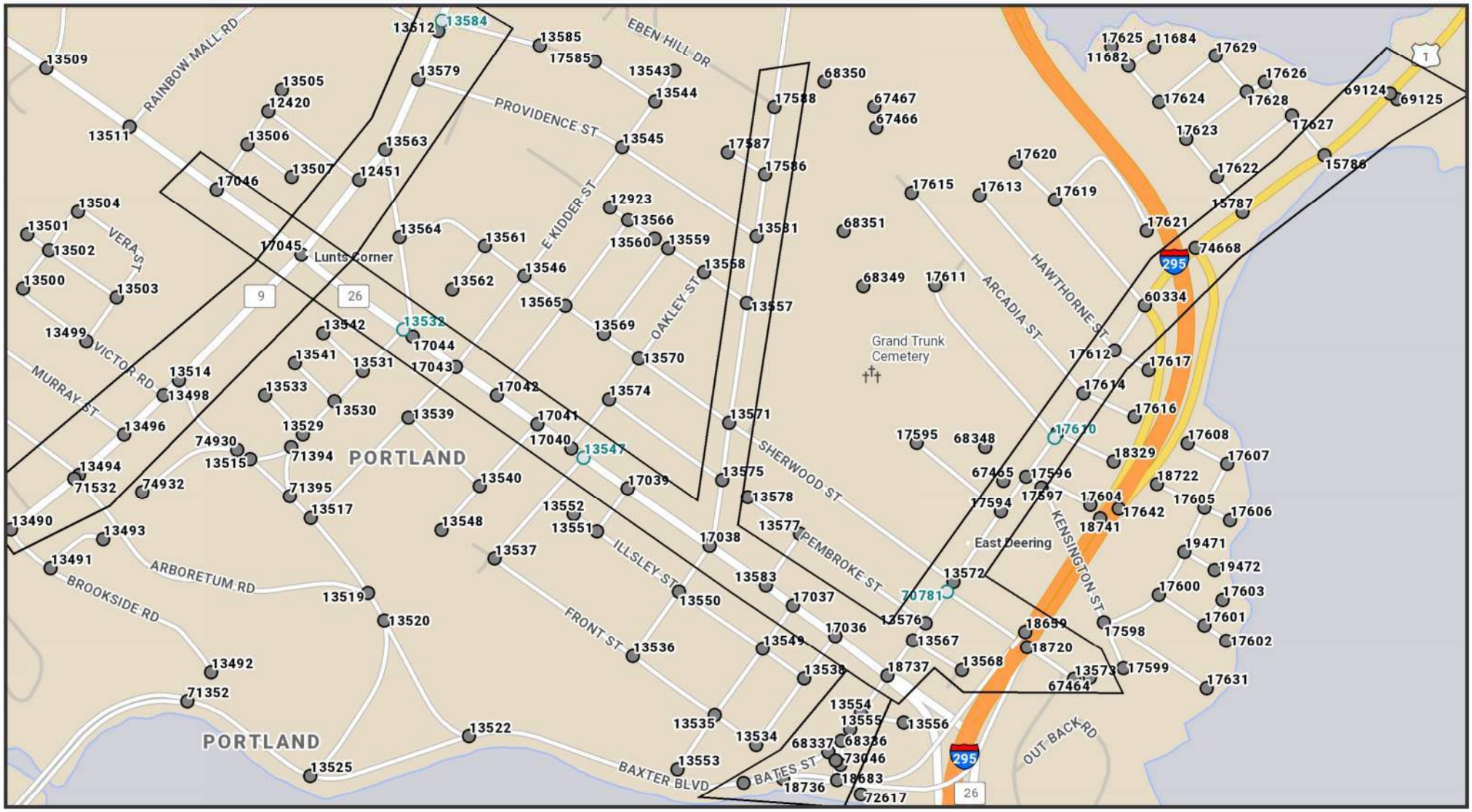
2.C Attachments

Attachment 2A – Node Map, Crash Summary Report, HCL Diagrams

Attachment 2A

Node Map
Crash Summary Report
HCL Diagrams

The Roux Institute at Northeastern University



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0.25 Miles

1 inch = 0.18 miles

Date: 6/1/2023
Time: 11:57:52 AM

LEGEND

LRAP_SEGMENTS_2

RURAL-SA-FC5 | URBAN-TW | RURAL-TW | WCSH | AGREEMENT | URBAN-STW | RURAL-STW | URBAN-SH | NO VALUE | RURAL-SH | RURAL-SA-FC6 | URBAN-SA

LRAP_SEGMENTS_2

RURAL-SA-FC5 | URBAN-TW | RURAL-TW | WCSH | NO VALUE | RURAL-SH | RURAL-SA-FC6 | URBAN-SA | AGREEMENT | URBAN-STW | RURAL-STW | URBAN-SH

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

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

REPORT DESCRIPTION

Portland
Washington Ave., Veranda St., Ocean Ave, Presumpscot St. Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

Route: **0026X**	Start Node: **18737**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **17046**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0009X**	Start Node: **13490**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **17045**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0009X**	Start Node: **17045**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **13584**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0560753**	Start Node: **18737**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **60334**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0001S**	Start Node: **74668**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **60334**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0001X**	Start Node: **74668**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **69124**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0560037**	Start Node: **18737**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18683**	End Offset: **0**	☑ **Exclude Last Node**
Route: **3200512**	Start Node: **68336**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **17592**	End Offset: **0**	☐ **Exclude Last Node**
Route: **3201021**	Start Node: **17592**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18736**	End Offset: **0**	☐ **Exclude Last Node**
Route: **3201022**	Start Node: **18736**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18683**	End Offset: **0**	☐ **Exclude Last Node**
Route: **3209819**	Start Node: **18683**	Start Offset: **0**	☑ **Exclude First Node**

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

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

REPORT DESCRIPTION

Portland
Washington Ave., Veranda St., Ocean Ave, Presumpscot St. Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

	End Node: **13555**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560599**	Start Node: **17038**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **17588**	End Offset: **0**	☐ **Exclude Last Node**
Route: **3209966**	Start Node: **70781**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **13573**	End Offset: **0**	☐ **Exclude Last Node**

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
13583	0026X - 1.35	Int of CHURCHILL ST WASHINGTON AV	2	7	0	0	1	1	5	28.6	8.854	0.26	0.27	0.96
												Statewide Crash Rate:	0.12	
P17044	0026X - 1.75	Int of MORSE ST WASHINGTON AV	2	3	0	0	0	1	2	33.3	6.970	0.14	0.29	0.00
												Statewide Crash Rate:	0.12	
18737	0026X - 1.21	Int of BATES ST VERANDA ST WASH AV SB WASHINGTO	9	17	0	0	1	2	13	18.8	11.095	0.51	0.98	0.52
												Statewide Crash Rate:	0.64	
17039	0026X - 1.50	Int of CUMMINGS ST WASHINGTON AV	2	2	0	0	1	0	1	50.0	6.933	0.10	0.29	0.00
												Statewide Crash Rate:	0.12	
17043	0026X - 1.70	Int of E KIDDER ST W KIDDER ST WASHINGTON AV	2	7	0	1	0	3	3	57.1	6.975	0.33	0.29	1.15
												Statewide Crash Rate:	0.12	
P17040	0026X - 1.56	Int of OAKLEY ST WASHINGTON AV	2	3	0	0	0	1	2	33.3	6.761	0.15	0.29	0.00
												Statewide Crash Rate:	0.12	
17045	0026X - 1.88	Int of OCEAN AV WASHINGTON AV	9	21	0	0	1	3	16	20.0	8.242	0.85	1.03	0.82
												Statewide Crash Rate:	0.64	
A13532	0026X - 1.76	Int of FERNALD ST WASHINGTON AV	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.12	
17036	0026X - 1.27	Int of GALVIN ST WASHINGTON AV	2	6	0	1	0	1	4	33.3	8.966	0.22	0.27	0.00
												Statewide Crash Rate:	0.12	
17041	0026X - 1.60	Int of ALTON ST WASHINGTON AV	2	0	0	0	0	0	0	0.0	6.553	0.00	0.30	0.00
												Statewide Crash Rate:	0.12	
17038	0026X - 1.41	Int of PRESUMPSCOT ST W PRESUMPSCOT ST WASHIN(	9	16	0	0	1	1	14	12.5	9.185	0.58	1.01	0.57
												Statewide Crash Rate:	0.64	
A13547	0026X - 1.55	Int of JOHANSEN ST, WASHINGTON AV	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.12	
17046	0026X - 1.98	Int of BYFIELD RD WASHINGTON AV	2	0	0	0	0	0	0	0.0	5.974	0.00	0.30	0.00
												Statewide Crash Rate:	0.12	
17037	0026X - 1.32	Int of RANDALL ST WASHINGTON AV	2	7	0	0	0	5	2	71.4	9.002	0.26	0.27	0.95
												Statewide Crash Rate:	0.12	
17042	0026X - 1.65	Int of INVERNESS ST WASHINGTON AV	2	0	0	0	0	0	0	0.0	6.698	0.00	0.29	0.00
												Statewide Crash Rate:	0.12	
13494	0009X - 64.09	Int of OCEAN AV ROSEDALE ST	2	1	0	0	0	1	0	100.0	3.047	0.11	0.36	0.00
												Statewide Crash Rate:	0.12	
13496	0009X - 64.15	Int of MURRAY ST OCEAN AV	2	1	0	0	1	0	0	100.0	2.855	0.12	0.37	0.00
												Statewide Crash Rate:	0.12	
13514	0009X - 64.22	Int of OCEAN AV PAYSON PARK DR	2	1	0	0	0	0	1	0.0	3.372	0.10	0.35	0.00
												Statewide Crash Rate:	0.12	
13498	0009X - 64.20	Int of OCEAN AV VICTOR RD	2	0	0	0	0	0	0	0.0	2.844	0.00	0.37	0.00
												Statewide Crash Rate:	0.12	
13490	0009X - 64	Int of BROOKSIDE RD OCEAN AV	2	0	0	0	0	0	0	0.0	2.517	0.00	0.38	0.00
												Statewide Crash Rate:	0.12	
71532	0009X - 64.08	Int of ARBORETUM RD OCEAN AV	2	3	0	0	0	1	2	33.3	2.844	0.35	0.37	0.00
												Statewide Crash Rate:	0.12	
13579	0009X - 64.58	Int of OCEAN AV PROVIDENCE ST	2	1	0	0	0	0	1	0.0	1.632	0.20	0.42	0.00
												Statewide Crash Rate:	0.12	

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
P13512	0009X - 64.63	Int of OCEAN AV RAINBOW MALL RD	2	2	0	0	0	0	2	0.0	1.311	0.51	0.44	1.15
												Statewide Crash Rate:	0.12	
13563	0009X - 64.51	Int of MORSE ST OCEAN AV	2	2	0	0	0	1	1	50.0	1.649	0.40	0.42	0.00
												Statewide Crash Rate:	0.12	
A13584	0009X - 64.64	Int of GRAFTON ST OCEAN AV	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.12	
12451	0009X - 64.47	Int of OCEAN AV, SLEMONS ST	2	0	0	0	0	0	0	0.0	1.500	0.00	0.43	0.00
												Statewide Crash Rate:	0.12	
P13572	0560753 - 0.11	Int of SHERWOOD ST VERANDA ST	2	0	0	0	0	0	0	0.0	1.890	0.00	0.41	0.00
												Statewide Crash Rate:	0.12	
13576	0560753 - 0.06	Int of PEMBROKE ST VERANDA ST	2	0	0	0	0	0	0	0.0	1.782	0.00	0.41	0.00
												Statewide Crash Rate:	0.12	
13567	0560753 - 0.04	Int of JORDAN ST, VERANDA ST	2	0	0	0	0	0	0	0.0	1.795	0.00	0.41	0.00
												Statewide Crash Rate:	0.12	
A17610	0560753 - 0.28	Int of HODGINS ST VERANDA ST	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.12	
17612	0560753 - 0.38	Int of FAYETTE ST HAWTHORNE ST VERANDA ST	2	0	0	0	0	0	0	0.0	1.558	0.00	0.43	0.00
												Statewide Crash Rate:	0.12	
17594	0560753 - 0.19	Int of DALTON ST VERANDA ST	2	0	0	0	0	0	0	0.0	1.457	0.00	0.43	0.00
												Statewide Crash Rate:	0.12	
17614	0560753 - 0.33	Int of ARCADIA ST FAIRFIELD ST VERANDA ST	2	1	0	0	0	1	0	100.0	1.677	0.20	0.42	0.00
												Statewide Crash Rate:	0.12	
P17609	0560753 - 0.29	Int of UPLAND AV, VERANDA ST	2	0	0	0	0	0	0	0.0	1.739	0.00	0.41	0.00
												Statewide Crash Rate:	0.12	
A70781	0560753 - 0.10	Int of SHERWOOD ST VERANDA ST	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.12	
17596	0560753 - 0.23	Int of KENSINGTON ST VERANDA ST	2	1	0	0	0	1	0	100.0	1.671	0.20	0.42	0.00
												Statewide Crash Rate:	0.12	
60334	0001S - 16.35	Int of RAMP ON FROM VERANDA ST VERANDA ST WORD	2	10	1	1	0	4	4	60.0	2.010	1.66	0.35	4.75
												Statewide Crash Rate:	0.10	
15786	0001X - 52.42	Int of OREGON ST VERANDA ST	2	2	0	0	0	1	1	50.0	4.144	0.16	0.33	0.00
												Statewide Crash Rate:	0.12	
15787	0001X - 52.33	Int of OLYMPIA ST VERANDA ST	2	2	0	0	0	0	2	0.0	3.044	0.22	0.36	0.00
												Statewide Crash Rate:	0.12	
69124	0001X - 52.50	Int of ENT TO MARTINS POINT VERANDA ST	9	2	0	0	1	0	1	50.0	4.875	0.14	1.14	0.00
												Statewide Crash Rate:	0.64	
74668	0001X - 52.27	Int of US 1 NB VERANDA ST	2	0	0	0	0	0	0	0.0	5.103	0.00	0.28	0.00
												Statewide Crash Rate:	0.10	
13554	0560037 - 0.04	Int of BATES CT BATES ST	2	0	0	0	0	0	0	0.0	2.461	0.00	0.38	0.00
												Statewide Crash Rate:	0.12	
13555	0560037 - 0.06	Non Int BATES ST	2	0	0	0	0	0	0	0.0	2.223	0.00	0.39	0.00
												Statewide Crash Rate:	0.12	
68336	0560037 - 0.07	Int of BATES ST BATES ST CUT	2	0	0	0	0	0	0	0.0	1.167	0.00	0.45	0.00
												Statewide Crash Rate:	0.12	

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
68338	0560037 - 0.09	Int of BATES ST RD INV 3209820	2	0	0	0	0	0	0	0.0	0.251	0.00	0.48	0.00
											Statewide Crash Rate:	0.12		
17592	3200512 - 0.10	Int of BATES ST CUT BAXTER BLVD CHAS LORING HWY	2	2	0	0	0	0	2	0.0	3.696	0.18	0.34	0.00
											Statewide Crash Rate:	0.12		
68337	3200512 - 0.02	Int of BATES ST CUT RD INV 3209820	2	0	0	0	0	0	0	0.0	0.920	0.00	0.48	0.00
											Statewide Crash Rate:	0.12		
18736	3201021 - 2.10	Int of CHAS LORING HWY CHAS LORING SB US 1 NB	2	0	0	0	0	0	0	0.0	1.830	0.00	0.41	0.00
											Statewide Crash Rate:	0.12		
18683	3201022 - 0.05	Int of BATES ST CHAS LORING SB US 1 NB	2	4	0	0	0	0	4	0.0	2.699	0.49	0.32	1.52
											Statewide Crash Rate:	0.10		
73046	3209819 - 0.02	Non Int BATES ST	2	0	0	0	0	0	0	0.0	1.043	0.00	0.46	0.00
											Statewide Crash Rate:	0.12		
13575	0560599 - 0.18	Int of PRESUMPSCOT ST SAVOY ST	2	0	0	0	0	0	0	0.0	2.558	0.00	0.38	0.00
											Statewide Crash Rate:	0.12		
13571	0560599 - 0.23	Int of PRESUMPSCOT ST SHERWOOD ST	2	5	0	0	0	0	5	0.0	2.735	0.61	0.37	1.64
											Statewide Crash Rate:	0.12		
17588	0560599 - 0.52	Non Int PRESUMPSCOT ST	2	0	0	0	0	0	0	0.0	1.686	0.00	0.42	0.00
											Statewide Crash Rate:	0.12		
17586	0560599 - 0.46	Int of GRAFTON ST PRESUMPSCOT ST	2	0	0	0	0	0	0	0.0	1.838	0.00	0.41	0.00
											Statewide Crash Rate:	0.12		
13581	0560599 - 0.40	Int of PRESUMPSCOT ST PROVIDENCE ST	2	1	0	0	0	0	1	0.0	2.153	0.15	0.39	0.00
											Statewide Crash Rate:	0.12		
13557	0560599 - 0.34	Int of BERKSHIRE RD PRESUMPSCOT ST	2	0	0	0	0	0	0	0.0	2.301	0.00	0.39	0.00
											Statewide Crash Rate:	0.12		
13573	3209966 - 0.14	End of SHERWOOD ST	2	0	0	0	0	0	0	0.0	0.035	0.00	-1.92	0.00
											Statewide Crash Rate:	0.12		
Study Years:	3.00	**NODE TOTALS:**		130	1	3	7	28	89	30.0	188.120	0.23	0.26	0.89

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
17036	18737	3123985	0 - 0.06	0026X - 1.21	0.06	2	8	0	0	2	1	5	37.5	0.00532	501.51	435.38	1.15
Int of GALVIN ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
17036	17037	3120740	0 - 0.05	0026X - 1.27	0.05	2	4	0	0	0	1	3	25.0	0.00450	296.57	454.10	0.00
Int of GALVIN ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
13583	17037	3123939	0 - 0.03	0026X - 1.32	0.03	2	5	0	0	0	0	5	0.0	0.00267	624.59	519.22	1.20
Int of CHURCHILL ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
13583	17038	3130464	0 - 0.06	0026X - 1.35	0.06	2	4	0	0	0	1	3	25.0	0.00524	254.42	436.96	0.00
Int of CHURCHILL ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
17038	17039	3129290	0 - 0.09	0026X - 1.41	0.09	2	9	0	0	1	1	6	25.0	0.00625	480.15	418.41	1.15
Int of PRESUMPSCOT ST W PRESUMPSCOT ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
13547	17039	188353	0 - 0.05	0026X - 1.50	0.05	2	3	0	1	0	1	1	66.7	0.00344	290.66	486.20	0.00
Int of JOHANSEN ST, WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
13547	17040	3130189	0 - 0.01	0026X - 1.55	0.01	2	0	0	0	0	0	0	0.0	0.00067	0.00	726.09	0.00
Int of JOHANSEN ST, WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
17040	17041	3122273	0 - 0.04	0026X - 1.56	0.04	2	2	0	0	0	0	2	0.0	0.00258	258.86	524.02	0.00
Int of OAKLEY ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
17041	17042	3117949	0 - 0.05	0026X - 1.60	0.05	2	1	0	0	0	0	1	0.0	0.00331	100.74	491.11	0.00
Int of ALTON ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
17042	17043	3117950	0 - 0.05	0026X - 1.65	0.05	2	0	0	0	0	0	0	0.0	0.00335	0.00	489.59	0.00
Int of INVERNESS ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
17043	17044	3122274	0 - 0.05	0026X - 1.70	0.05	2	1	0	0	0	0	1	0.0	0.00350	95.33	484.17	0.00
Int of E KIDDER ST W KIDDER ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
13532	17044	3123712	0 - 0.01	0026X - 1.75	0.01	2	0	0	0	0	0	0	0.0	0.00068	0.00	724.31	0.00
Int of FERNALD ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
13532	17045	3120381	0 - 0.12	0026X - 1.76	0.12	2	7	0	0	1	1	5	28.6	0.00795	293.67	394.95	0.74
Int of FERNALD ST WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
17045	17046	3122275	0 - 0.10	0026X - 1.88	0.10	2	12	0	0	1	2	9	25.0	0.00594	673.57	423.65	1.59
Int of OCEAN AV WASHINGTON AV				ST RTE 26											Statewide Crash Rate: 187.47		
13490	71532	4047222	0 - 0.08	0009X - 64	0.08	2	0	0	0	0	0	0	0.0	0.00195	0.00	490.54	0.00
Int of BROOKSIDE RD OCEAN AV				ST RTE 9											Statewide Crash Rate: 155.59		
71532	13494	4047090	0 - 0.01	0009X - 64.08	0.01	2	0	0	0	0	0	0	0.0	0.00033	0.00	671.81	0.00
Int of ARBORETUM RD OCEAN AV				ST RTE 9											Statewide Crash Rate: 155.59		
13494	13496	3118903	0 - 0.06	0009X - 64.09	0.06	2	0	0	0	0	0	0	0.0	0.00165	0.00	511.05	0.00
Int of OCEAN AV ROSEDALE ST				ST RTE 9											Statewide Crash Rate: 155.59		
13496	13498	3131557	0 - 0.05	0009X - 64.15	0.05	2	2	0	0	0	1	1	50.0	0.00139	479.39	533.21	0.00
Int of MURRAY ST OCEAN AV				ST RTE 9											Statewide Crash Rate: 155.59		
13498	13514	188273	0 - 0.02	0009X - 64.20	0.02	2	0	0	0	0	0	0	0.0	0.00054	0.00	644.44	0.00
Int of OCEAN AV VICTOR RD				ST RTE 9											Statewide Crash Rate: 155.59		

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
13514	17045	3131558	0 - 0.16	0009X - 64.22	0.16	2	9	0	0	0	1	7	12.5	0.00385	779.51	411.32	1.90
Int of OCEAN AV PAYSON PARK DR				ST RTE 9											Statewide Crash Rate: 155.59		
12451	17045	3119184	0 - 0.09	0009X - 64.38	0.09	2	0	0	0	0	0	0	0.0	0.00137	0.00	535.47	0.00
Int of OCEAN AV, SLEMONS ST				ST RTE 9											Statewide Crash Rate: 155.59		
12451	13563	3119183	0 - 0.04	0009X - 64.47	0.04	2	0	0	0	0	0	0	0.0	0.00058	0.00	639.34	0.00
Int of OCEAN AV, SLEMONS ST				ST RTE 9											Statewide Crash Rate: 155.59		
13563	13579	3131561	0 - 0.07	0009X - 64.51	0.07	2	0	0	0	0	0	0	0.0	0.00114	0.00	558.28	0.00
Int of MORSE ST OCEAN AV				ST RTE 9											Statewide Crash Rate: 155.59		
13512	13579	3122200	0 - 0.05	0009X - 64.58	0.05	2	2	0	0	0	0	2	0.0	0.00076	872.45	608.59	1.43
Int of OCEAN AV RAINBOW MALL RD				ST RTE 9											Statewide Crash Rate: 155.59		
13512	13584	188291	0 - 0.01	0009X - 64.63	0.01	2	0	0	0	0	0	0	0.0	0.00016	0.00	584.63	0.00
Int of OCEAN AV RAINBOW MALL RD				ST RTE 9											Statewide Crash Rate: 155.59		
13567	18737	3106268	0 - 0.04	0560753 - 0	0.04	2	1	0	0	0	0	1	0.0	0.00070	475.65	618.54	0.00
Int of JORDAN ST, VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
13567	13576	188382	0 - 0.02	0560753 - 0.04	0.02	2	0	0	0	0	0	0	0.0	0.00037	0.00	669.99	0.00
Int of JORDAN ST, VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
70781	13576	3936420	0 - 0.04	0560753 - 0.06	0.04	2	1	0	0	0	0	1	0.0	0.00067	495.79	623.15	0.00
Int of SHERWOOD ST VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
13572	70781	3936419	0 - 0.01	0560753 - 0.10	0.01	2	0	0	0	0	0	0	0.0	0.00018	0.00	618.07	0.00
Int of SHERWOOD ST VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
13572	17594	3123938	0 - 0.08	0560753 - 0.11	0.08	2	1	0	0	1	0	0	100.0	0.00119	280.27	553.39	0.00
Int of SHERWOOD ST VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
17594	17596	193314	0 - 0.04	0560753 - 0.19	0.04	2	0	0	0	0	0	0	0.0	0.00056	0.00	642.12	0.00
Int of DALTON ST VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
17596	17610	3106608	0 - 0.05	0560753 - 0.23	0.05	2	0	0	0	0	0	0	0.0	0.00086	0.00	594.58	0.00
Int of KENSINGTON ST VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
17609	17610	3106609	0 - 0.01	0560753 - 0.28	0.01	2	0	0	0	0	0	0	0.0	0.00016	0.00	588.07	0.00
Int of UPLAND AV, VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
17609	17614	3130048	0 - 0.04	0560753 - 0.29	0.04	2	0	0	0	0	0	0	0.0	0.00064	0.00	627.67	0.00
Int of UPLAND AV, VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
17612	17614	3122281	0 - 0.05	0560753 - 0.33	0.05	2	0	0	0	0	0	0	0.0	0.00076	0.00	609.48	0.00
Int of FAYETTE ST HAWTHORNE ST VERANDA ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
60334	17612	5402045	0 - 0.02	0560753 - 0.38	0.02	2	0	0	0	0	0	0	0.0	0.00029	0.00	670.69	0.00
Int of RAMP ON FROM VERANDA ST VERANDA ST WORDSWORTH ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
60334	17612	5402045	0.02 - 0.05	0560753 - 0.38	0.03	2	1	0	0	0	0	0	0.0	0.00044	754.25	660.92	1.14
Int of RAMP ON FROM VERANDA ST VERANDA ST WORDSWORTH ST				RD INV 05 60753											Statewide Crash Rate: 155.59		
74668	60334	5402069	0 - 0.04	0001S - 16.28	0.04	2	0	0	0	0	0	0	0.0	0.00095	0.00	581.51	0.00
Int of US 1 NB VERANDA ST				US 1 SB											Statewide Crash Rate: 155.59		

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
74668	60334	5402069	0.04 - 0.07	0001S - 16.32	0.03	2	0	0	0	0	0	0	0.0	0.00072	0.00	616.20	0.00
Int of US 1 NB VERANDA ST				US 1 SB											Statewide Crash Rate: 155.59		
15787	74668	5402070	0 - 0.06	0001X - 52.27	0.06	2	1	0	0	0	0	1	0.0	0.00181	184.49	499.79	0.00
Int of OLYMPIA ST VERANDA ST				US 1											Statewide Crash Rate: 155.59		
15786	15787	5402071	0 - 0.09	0001X - 52.33	0.09	2	0	0	0	0	0	0	0.0	0.00260	0.00	455.53	0.00
Int of OREGON ST VERANDA ST				US 1											Statewide Crash Rate: 155.59		
69124	15786	3509045	0 - 0.08	0001X - 52.42	0.08	2	0	0	0	0	0	0	0.0	0.00423	0.00	401.36	0.00
Int of ENT TO MARTINS POINT VERANDA ST				US 1											Statewide Crash Rate: 155.59		
13554	18737	3131559	0 - 0.04	0560037 - 0	0.04	2	0	0	0	0	0	0	0.0	0.00095	0.00	581.88	0.00
Int of BATES CT BATES ST				RD INV 05 60037											Statewide Crash Rate: 155.59		
13554	13555	3139091	0 - 0.02	0560037 - 0.04	0.02	2	0	0	0	0	0	0	0.0	0.00047	0.00	656.39	0.00
Int of BATES CT BATES ST				RD INV 05 60037											Statewide Crash Rate: 155.59		
13555	68336	3503103	0 - 0.01	0560037 - 0.06	0.01	2	0	0	0	0	0	0	0.0	0.00012	0.00	444.66	0.00
Non Int BATES ST				RD INV 05 60037											Statewide Crash Rate: 155.59		
68336	68338	3503129	0 - 0.02	0560037 - 0.07	0.02	2	0	0	0	0	0	0	0.0	0.00005	0.00	-577.91	0.00
Int of BATES ST BATES ST CUT				RD INV 05 60037											Statewide Crash Rate: 155.59		
68338	18683	3503130	0 - 0.02	0560037 - 0.09	0.02	2	0	0	0	0	0	0	0.0	0.00005	0.00	-548.10	0.00
Int of BATES ST RD INV 3209820				RD INV 05 60037											Statewide Crash Rate: 155.59		
68336	68337	3503127	0 - 0.02	3200512 - 0	0.02	2	0	0	0	0	0	0	0.0	0.00018	0.00	617.37	0.00
Int of BATES ST BATES ST CUT				RD INV 3200512											Statewide Crash Rate: 155.59		
68337	17592	3503128	0 - 0.08	3200512 - 0.02	0.08	2	0	0	0	0	0	0	0.0	0.00075	0.00	611.15	0.00
Int of BATES ST CUT RD INV 3209820				RD INV 3200512											Statewide Crash Rate: 155.59		
17592	18736	3119268	0 - 0.04	3201021 - 2.06	0.04	2	0	0	0	0	0	0	0.0	0.00092	0.00	586.34	0.00
Int of BATES ST CUT BAXTER BLVD CHAS LORING HWY				RD INV 3201021											Statewide Crash Rate: 155.59		
18683	18736	2074332	0 - 0.05	3201022 - 0	0.05	2	1	0	0	1	0	0	100.0	0.00081	413.42	602.21	0.00
Int of BATES ST CHAS LORING SB US 1 NB				RD INV 3201022											Statewide Crash Rate: 155.59		
18683	73046	4352985	0 - 0.02	3209819 - 0	0.02	2	0	0	0	0	0	0	0.0	0.00021	0.00	641.04	0.00
Int of BATES ST CHAS LORING SB US 1 NB				RD INV 3209819											Statewide Crash Rate: 155.59		
73046	13555	4352986	0 - 0.04	3209819 - 0.02	0.04	2	0	0	0	0	0	0	0.0	0.00042	0.00	664.36	0.00
Non Int BATES ST				RD INV 3209819											Statewide Crash Rate: 155.59		
13575	17038	3106271	0 - 0.06	0560599 - 0.12	0.06	2	4	0	0	0	0	4	0.0	0.00153	872.25	521.05	1.67
Int of PRESUMPSCOT ST SAVOY ST				RD INV 05 60599											Statewide Crash Rate: 155.59		
13571	13575	3106269	0 - 0.05	0560599 - 0.18	0.05	2	0	0	0	0	0	0	0.0	0.00125	0.00	546.99	0.00
Int of PRESUMPSCOT ST SHERWOOD ST				RD INV 05 60599											Statewide Crash Rate: 155.59		
13557	13571	3106267	0 - 0.11	0560599 - 0.23	0.11	2	4	0	0	0	0	4	0.0	0.00246	541.65	461.79	1.17
Int of BERKSHIRE RD PRESUMPSCOT ST				RD INV 05 60599											Statewide Crash Rate: 155.59		
13557	13581	3131560	0 - 0.06	0560599 - 0.34	0.06	2	0	0	0	0	0	0	0.0	0.00138	0.00	534.42	0.00
Int of BERKSHIRE RD PRESUMPSCOT ST				RD INV 05 60599											Statewide Crash Rate: 155.59		
13581	17586	3106272	0 - 0.06	0560599 - 0.40	0.06	2	2	0	0	0	1	1	50.0	0.00115	580.83	557.96	1.04
Int of PRESUMPSCOT ST PROVIDENCE ST				RD INV 05 60599											Statewide Crash Rate: 155.59		

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
17586	17588	3106607	0 - 0.06	0560599 - 0.46	0.06	2	2	0	0	0	0	2	0.0	0.00101	658.90	574.08	1.15
Int of GRAFTON ST	PRESUMPSCOT ST			RD INV 05 60599											Statewide Crash Rate: 155.59		
70781	13573	5080143	0 - 0.14	3209966 - 0	0.14	2	1	0	0	0	0	1	0.0	0.00010	3433.24	1378.74	2.49
Int of SHERWOOD ST	VERANDA ST			RD INV3209966											Statewide Crash Rate: 334.56		
Study Years:	3.00			**Section Totals:**	3.04		88	0	1	7	11	66	21.6	0.10002	293.28	233.67	1.26
				Grand Totals:	3.04		218	1	4	14	39	155	26.6	0.10002	726.52	338.49	2.15

Crash Summary

Section Details														
Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
17036	18737	3123985	0 - 0.06	0026X - 1.21	8	0	0	2	1	5	2022-31026	10/26/2022	1.22	PD
											2020-19629	08/18/2020	1.23	PD
											2022-10613	03/31/2022	1.23	PD
											2021-30654	11/08/2021	1.23	PD
											2020-16740	06/20/2020	1.24	PD
											2021-7801	03/28/2021	1.25	B
											2022-6794	02/27/2022	1.25	C
											2021-24542	09/15/2021	1.26	B
17036	17037	3120740	0 - 0.05	0026X - 1.27	4	0	0	0	1	3	2022-11713	04/26/2022	1.29	PD
											2020-570	01/08/2020	1.29	PD
											2022-19241	07/08/2022	1.29	PD
											2021-10548	05/02/2021	1.31	C
13583	17037	3123939	0 - 0.03	0026X - 1.32	5	0	0	0	0	5	2021-23522	09/05/2021	1.33	PD
											2020-24631	10/14/2020	1.34	PD
											2022-18638	07/05/2022	1.34	PD
											2021-27480	10/13/2021	1.34	PD
											2021-35328	12/14/2021	1.34	PD
13583	17038	3130464	0 - 0.06	0026X - 1.35	4	0	0	0	1	3	2020-8325	03/17/2020	1.38	PD
											2021-1283	01/08/2021	1.39	PD
											2021-14548	06/13/2021	1.40	C
											2022-95	01/04/2022	1.40	PD
17038	17039	3129290	0 - 0.09	0026X - 1.41	9	0	0	1	1	6	2020-5795	01/24/2020	1.43	PD
											2021-5642	03/02/2021	1.44	PD
											2021-28981	10/26/2021	1.44	PD
											2021-3581	02/09/2021	1.45	PD
											2022-19230	07/09/2022	1.46	B
											2022-31358	10/28/2022	1.46	C
											2020-577	01/08/2020	1.46	PD
											2022-37357	12/15/2022	1.48	
											2022-15896	06/08/2022	1.48	PD
13547	17039	188353	0 - 0.05	0026X - 1.50	3	0	1	0	1	1	2022-20681	07/23/2022	1.52	C
											2022-26880	09/16/2022	1.53	A
											2021-31682	11/12/2021	1.53	PD

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
13547	17040	3130189	0 - 0.01	0026X - 1.55	0	0	0	0	0	0				
17040	17041	3122273	0 - 0.04	0026X - 1.56	2	0	0	0	0	2	2021-33246	11/24/2021	1.57	PD
											2021-10804	04/12/2021	1.59	PD
17041	17042	3117949	0 - 0.05	0026X - 1.60	1	0	0	0	0	1	2022-24535	08/27/2022	1.64	PD
17042	17043	3117950	0 - 0.05	0026X - 1.65	0	0	0	0	0	0				
17043	17044	3122274	0 - 0.05	0026X - 1.70	1	0	0	0	0	1	2020-1425	01/15/2020	1.74	PD
13532	17044	3123712	0 - 0.01	0026X - 1.75	0	0	0	0	0	0				
13532	17045	3120381	0 - 0.12	0026X - 1.76	7	0	0	1	1	5	2020-3007	01/26/2020	1.79	PD
											2020-19019	08/10/2020	1.80	PD
											2022-26242	09/15/2022	1.83	C
											2021-27342	10/08/2021	1.83	PD
											2020-15032	06/25/2020	1.84	PD
											2022-8648	03/16/2022	1.85	B
											2021-2870	01/27/2021	1.87	PD
17045	17046	3122275	0 - 0.10	0026X - 1.88	12	0	0	1	2	9	2020-22434	09/19/2020	1.89	PD
											2021-11755	05/17/2021	1.89	PD
											2021-21220	08/13/2021	1.91	C
											2020-27004	11/05/2020	1.91	PD
											2020-19456	08/17/2020	1.91	PD
											2022-22921	08/14/2022	1.91	PD
											2022-34236	11/15/2022	1.91	PD
											2020-284	01/04/2020	1.91	PD
											2022-12824	05/06/2022	1.91	PD
											2021-17026	06/21/2021	1.92	PD
											2020-13567	06/08/2020	1.93	C
											2020-30644	12/07/2020	1.97	B
13490	71532	4047222	0 - 0.08	0009X - 64	0	0	0	0	0	0				
71532	13494	4047090	0 - 0.01	0009X - 64.08	0	0	0	0	0	0				
13494	13496	3118903	0 - 0.06	0009X - 64.09	0	0	0	0	0	0				
13496	13498	3131557	0 - 0.05	0009X - 64.15	2	0	0	0	1	1	2021-28907	10/25/2021	64.17	C
											2021-32647	11/23/2021	64.19	PD
13498	13514	188273	0 - 0.02	0009X - 64.20	0	0	0	0	0	0				

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
13514	17045	3131558	0 - 0.16	0009X - 64.22	9	0	0	0	1	7	2022-3208	01/31/2022	64.26	PD
											2022-26088	09/14/2022	64.35	PD
											2021-19301	07/27/2021	64.35	PD
											2021-16501	07/01/2021	64.35	PD
											2022-31649	09/23/2022	64.35	PD
											2021-21370	08/09/2021	64.37	
											2021-7238	03/20/2021	64.37	C
											2022-14394	05/26/2022	64.37	PD
											2022-4712	02/10/2022	64.37	PD
12451	17045	3119184	0 - 0.09	0009X - 64.38	0	0	0	0	0	0				
12451	13563	3119183	0 - 0.04	0009X - 64.47	0	0	0	0	0	0				
13563	13579	3131561	0 - 0.07	0009X - 64.51	0	0	0	0	0	0				
13512	13579	3122200	0 - 0.05	0009X - 64.58	2	0	0	0	0	2	2021-7927	03/29/2021	64.59	PD
											2021-10696	05/04/2021	64.60	PD
13512	13584	188291	0 - 0.01	0009X - 64.63	0	0	0	0	0	0				
13567	18737	3106268	0 - 0.04	0560753 - 0	1	0	0	0	0	1	2020-4178	02/06/2020	0.03	PD
13567	13576	188382	0 - 0.02	0560753 - 0.04	0	0	0	0	0	0				
70781	13576	3936420	0 - 0.04	0560753 - 0.06	1	0	0	0	0	1	2022-21589	08/01/2022	0.08	PD
13572	70781	3936419	0 - 0.01	0560753 - 0.10	0	0	0	0	0	0				
13572	17594	3123938	0 - 0.08	0560753 - 0.11	1	0	0	1	0	0	2021-30986	11/10/2021	0.16	B
17594	17596	193314	0 - 0.04	0560753 - 0.19	0	0	0	0	0	0				
17596	17610	3106608	0 - 0.05	0560753 - 0.23	0	0	0	0	0	0				
17609	17610	3106609	0 - 0.01	0560753 - 0.28	0	0	0	0	0	0				
17609	17614	3130048	0 - 0.04	0560753 - 0.29	0	0	0	0	0	0				
17612	17614	3122281	0 - 0.05	0560753 - 0.33	0	0	0	0	0	0				
60334	17612	5402045	0 - 0.02	0560753 - 0.38	0	0	0	0	0	0				
60334	17612	5402045	0.02 - 0.05	0560753 - 0.38	1	0	0	0	0	0	2022-30998	10/27/2022	0.40	
74668	60334	5402069	0.04 - 0.07	0001S - 16.28	0	0	0	0	0	0				
74668	60334	5402069	0 - 0.04	0001S - 16.28	0	0	0	0	0	0				
15787	74668	5402070	0 - 0.06	0001X - 52.27	1	0	0	0	0	1	2021-29118	10/26/2021	52.28	PD
15786	15787	5402071	0 - 0.09	0001X - 52.33	0	0	0	0	0	0				
69124	15786	3509045	0 - 0.08	0001X - 52.42	0	0	0	0	0	0				
13554	18737	3131559	0 - 0.04	0560037 - 0	0	0	0	0	0	0				
13554	13555	3139091	0 - 0.02	0560037 - 0.04	0	0	0	0	0	0				
13555	68336	3503103	0 - 0.01	0560037 - 0.06	0	0	0	0	0	0				
68336	68338	3503129	0 - 0.02	0560037 - 0.07	0	0	0	0	0	0				
68338	18683	3503130	0 - 0.02	0560037 - 0.09	0	0	0	0	0	0				

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
68336	68337	3503127	0 - 0.02	3200512 - 0	0	0	0	0	0	0				
68337	17592	3503128	0 - 0.08	3200512 - 0.02	0	0	0	0	0	0				
17592	18736	3119268	0 - 0.04	3201021 - 2.06	0	0	0	0	0	0				
18683	18736	2074332	0 - 0.05	3201022 - 0	1	0	0	1	0	0	2020-23256	09/29/2020	0.01	B
18683	73046	4352985	0 - 0.02	3209819 - 0	0	0	0	0	0	0				
73046	13555	4352986	0 - 0.04	3209819 - 0.02	0	0	0	0	0	0				
13575	17038	3106271	0 - 0.06	0560599 - 0.12	4	0	0	0	0	4	2020-2143	01/17/2020	0.12	PD
											2020-26110	10/30/2020	0.15	PD
											2021-20907	08/12/2021	0.15	PD
											2021-4517	02/20/2021	0.15	PD
13571	13575	3106269	0 - 0.05	0560599 - 0.18	0	0	0	0	0	0				
13557	13571	3106267	0 - 0.11	0560599 - 0.23	4	0	0	0	0	4	2020-474	01/07/2020	0.28	PD
											2022-34548	11/22/2022	0.31	PD
											2022-30031	10/19/2022	0.31	PD
											2021-23912	09/09/2021	0.33	PD
13557	13581	3131560	0 - 0.06	0560599 - 0.34	0	0	0	0	0	0				
13581	17586	3106272	0 - 0.06	0560599 - 0.40	2	0	0	0	1	1	2022-37245	12/14/2022	0.43	PD
											2022-21108	07/27/2022	0.44	C
17586	17588	3106607	0 - 0.06	0560599 - 0.46	2	0	0	0	0	2	2021-3209	02/06/2021	0.48	PD
											2020-19666	08/19/2020	0.48	PD
70781	13573	5080143	0 - 0.14	3209966 - 0	1	0	0	0	0	1	2020-8326	03/17/2020	0.02	PD
				Totals:	88	0	1	7	11	66				

Crash Summary II - Characteristics

Crashes by Day and Hour

	AM												Hour of Day PM													
Day Of Week	**12**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**Un**	**Tot**
SUNDAY	1	0	0	0	0	0	0	0	1	2	0	3	1	1	3	1	1	2	3	0	2	0	0	0	0	21
MONDAY	0	0	0	0	0	0	1	1	4	2	2	2	1	3	4	2	3	2	0	0	1	0	0	0	0	28
TUESDAY	0	0	0	0	0	0	4	3	0	1	4	3	3	4	2	4	3	5	4	2	1	0	0	1	0	44
WEDNESDAY	0	0	0	0	0	0	2	1	5	1	0	2	8	3	3	3	4	5	1	1	0	1	0	1	0	41
THURSDAY	1	0	0	1	1	0	1	3	3	2	2	0	0	2	3	3	0	5	0	1	1	0	1	0	0	30
FRIDAY	0	0	0	0	0	0	0	2	6	0	1	3	0	0	1	5	3	3	3	2	0	0	1	0	0	30
SATURDAY	0	0	0	0	1	0	0	0	0	2	2	2	1	3	3	3	2	1	1	0	1	1	1	0	0	24
Totals	2	0	0	1	2	0	8	10	19	10	11	15	14	16	19	21	16	23	12	6	6	2	3	2	0	**218**

Vehicle Counts by Type

Unit Type	Total	Unit Type	Total
1-Passenger Car	211	23-Bicyclist	8
2-(Sport) Utility Vehicle	131	24-Witness	33
3-Passenger Van	3	25-Other	8
4-Cargo Van (10K lbs or Less)	4	26-Construction	1
5-Pickup	38	27-Farm Vehicle	0
6-Motor Home	0	28-Horse and Buggy	0
7-School Bus	1	**Total**	**455**
8-Transit Bus	0		
9-Motor Coach	0		
10-Other Bus	0		
11-Motorcycle	1		
12-Moped	1		
13-Low Speed Vehicle	0		
14-Autocycle	0		
15-Experimental	0		
16-Other Light Trucks (10,000 lbs or Less)	2		
17-Medium/Heavy Trucks (More than 10,000 lbs)	13		
18-ATV - (4 wheel)	0		
20-ATV - (2 wheel)	0		
21-Snowmobile	0		
22-Pedestrian	0		

Crash Summary II - Characteristics

Crashes by Driver Action at Time of Crash

Driver Action at Time of Crash	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
No Contributing Action	24	160	7	0	0	0	191
Ran Off Roadway	5	0	0	0	0	0	5
Failed to Yield Right-of-Way	59	4	0	0	0	0	63
Ran Red Light	3	0	0	0	0	0	3
Ran Stop Sign	5	0	0	0	0	0	5
Disregarded Other Traffic Sign	2	0	0	0	0	0	2
Disregarded Other Road Markings	0	0	0	0	0	0	0
Exceeded Posted Speed Limit	3	3	0	0	0	0	6
Drove Too Fast For Conditions	4	0	0	0	0	0	4
Improper Turn	4	0	0	0	0	0	4
Improper Backing	4	2	0	0	0	0	6
Improper Passing	5	1	0	0	0	0	6
Wrong Way	0	0	0	0	0	0	0
Followed Too Closely	53	4	0	0	0	0	57
Failed to Keep in Proper Lane	15	0	0	0	0	0	15
Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner	6	0	0	0	0	0	6
Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway	1	0	0	0	0	0	1
Over-Correcting/Over-Steering	3	0	0	0	0	0	3
Other Contributing Action	9	5	0	0	0	0	14
Unknown	1	1	0	0	0	0	2
Total	**206**	**180**	**7**	**0**	**0**	**0**	**393**

Crashes by Apparent Physical Condition And Driver

Apparent Physical Condition	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
Apparently Normal	193	176	7	0	0	8	384
Physically Impaired	0	0	0	0	0	0	0
Emotional(Depressed, Angry, Disturbed, etc.)	1	0	0	0	0	0	1
Ill (Sick)	1	0	0	0	0	0	1
Asleep or Fatigued	1	0	0	0	0	0	1
Under the Influence of Medications/Drugs/Alcohol	3	0	0	0	0	0	3
Other	2	4	0	0	0	0	6
Total	**201**	**180**	**7**	**0**	**0**	**8**	**396**

Driver Age by Unit Type

Age	Driver	Bicycle	SnowMobile	Pedestrian	ATV	Total
09-Under	1	0	0	0	0	1
10-14	0	0	0	0	0	0
15-19	34	0	0	0	0	34
20-24	44	0	0	0	0	44
25-29	45	0	0	0	0	45
30-39	87	0	0	0	0	87
40-49	70	0	0	0	0	70
50-59	40	0	0	0	0	40
60-69	41	0	0	0	0	41
70-79	21	0	0	0	0	21
80-Over	9	0	0	0	0	9
Unknown	22	8	0	0	0	30
Total	**414**	**8**	**0**	**0**	**0**	**422**

Crash Summary II - Characteristics

Most Harmful Event

Most Harmful Event	Total	Most Harmful Event	Total
1-Overturn / Rollover	1	38-Other Fixed Object (wall, building, tunnel, etc.)	1
2-Fire / Explosion	0	39-Unknown	15
3-Immersion	0	40-Gate or Cable	0
4-Jackknife	0	41-Pressure Ridge	0
5-Cargo / Equipment Loss Or Shift	0	**Total**	**407**
6-Fell / Jumped from Motor Vehicle	1		
7-Thrown or Falling Object	0		
8-Other Non-Collision	0		
9-Pedestrian	0		
10-Pedalcycle	1		
11-Railway Vehicle - Train, Engine	0		
12-Animal	0		
13-Motor Vehicle in Transport	373		
14-Parked Motor Vehicle	8		
15-Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle	1		
16-Work Zone / Maintenance Equipment	0		
17-Other Non-Fixed Object	0		
18-Impact Attenuator / Crash Cushion	0		
19-Bridge Overhead Structure	0		
20-Bridge Pier or Support	0		
21-Bridge Rail	0		
22-Cable Barrier	0		
23-Culvert	0		
24-Curb	0		
25-Ditch	0		
26-Embankment	0		
27-Guardrail Face	0		
28-Guardrail End	0		
29-Concrete Traffic Barrier	0		
30-Other Traffic Barrier	1		
31-Tree (Standing)	1		
32-Utility Pole / Light Support	4		
33-Traffic Sign Support	0		
34-Traffic Signal Support	0		
35-Fence	0		
36-Mailbox	0		
37-Other Post, Pole, or Support	0		

Injury Data

Severity Code	Injury Crashes	Number Of Injuries
K	1	1
A	4	4
B	14	19
C	39	58
PD	155	0
Total	**213**	**82**

Road Character

Road Grade	Total
1-Level	185
2-On Grade	33
3-Top of Hill	0
4-Bottom of Hill	0
5-Other	0
Total	**218**

Traffic Control Devices

Traffic Control Device	Total
1-Traffic Signals (Stop & Go)	74
2-Traffic Signals (Flashing)	2
3-Advisory/Warning Sign	2
4-Stop Signs - All Approaches	1
5-Stop Signs - Other	29
6-Yield Sign	3
7-Curve Warning Sign	1
8-Officer, Flagman, School Patrol	2
9-School Bus Stop Arm	0
10-School Zone Sign	1
11-R.R. Crossing Device	0
12-No Passing Zone	1
13-None	101
14-Other	1
Total	**218**

Light

Light Condition	Total
1-Daylight	173
2-Dawn	3
3-Dusk	3
4-Dark - Lighted	39
5-Dark - Not Lighted	0
6-Dark - Unknown Lighting	0
7-Unknown	0
Total	**218**

Crash Summary II - Characteristics

Crashes by Year and Month

Month	2020	2021	2022	Total
JANUARY	13	4	7	24
FEBRUARY	7	9	5	21
MARCH	6	5	6	17
APRIL	3	4	1	8
MAY	3	5	7	15
JUNE	8	7	2	17
JULY	9	6	8	23
AUGUST	9	5	7	21
SEPTEMBER	7	5	6	18
OCTOBER	10	10	7	27
NOVEMBER	1	6	6	13
DECEMBER	4	4	6	14
Total	**80**	**70**	**68**	**218**

Report is limited to the last 10 years of data.

Crash Summary II - Characteristics

Crashes by Crash Type and Type of Location

Crash Type	Straight Road	Curved Road	Three Leg Intersection	Four Leg Intersection	Five or More Leg Intersection	Driveways	Bridges	Interchanges	Other	Parking Lot	Private Way	Cross Over	Railroad Crossing	Traffic Circle-Roundabout	Total
Object in Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rear End - Sideswipe	38	0	19	44	0	3	0	0	0	0	0	0	0	0	104
Head-on - Sideswipe	2	0	1	0	0	0	0	0	0	0	0	0	0	0	3
Intersection Movement	0	0	22	26	0	31	0	0	0	0	0	0	0	0	79
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Train	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Went Off Road	8	0	5	6	0	1	0	0	0	0	0	0	0	0	20
All Other Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	1	0	2	3	0	2	0	0	0	0	0	0	0	0	8
Other	3	0	0	1	0	0	0	0	0	0	0	0	0	0	4
Jackknife	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rollover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Submersion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thrown or Falling Object	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**52**	**0**	**49**	**80**	**0**	**37**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**218**

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Blowing Sand, Soil, Dirt												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Blowing Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Clear												
Dark - Lighted	23	0	0	0	0	0	0	0	0	0	1	24
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	2	0	0	0	0	0	0	0	0	0	0	2
Daylight	118	2	0	0	0	0	0	1	0	0	8	129
Dusk	2	0	0	0	0	0	0	0	0	0	0	2
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Cloudy												
Dark - Lighted	2	0	0	0	0	0	0	0	0	0	2	4
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	1	1
Daylight	23	0	0	0	0	0	0	0	0	0	5	28
Dusk	0	0	0	0	0	0	0	0	0	0	1	1
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Fog, Smog, Smoke												
Dark - Lighted	1	0	0	0	0	0	0	0	0	0	0	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Other												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	1	0	0	1
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Rain												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	7	7
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	1	0	0	12	13
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Severe Crosswinds												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Sleet, Hail (Freezing Rain or Drizzle)												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Snow												
Dark - Lighted	0	0	0	0	0	0	0	3	0	0	0	3
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	1	0	0	1	2
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**171**	**2**	**0**	**0**	**0**	**0**	**0**	**6**	**1**	**0**	**38**	**218**

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

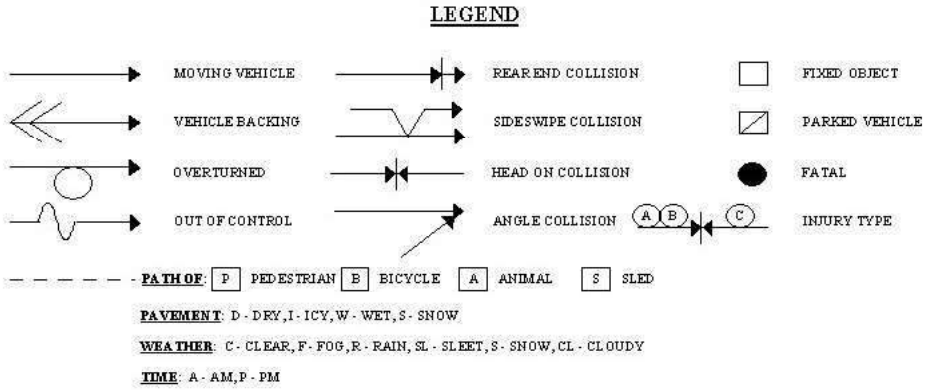
LOW NODE: **13514** HIGH NODE: **17045** REGION: **1** U/R: **URBAN**

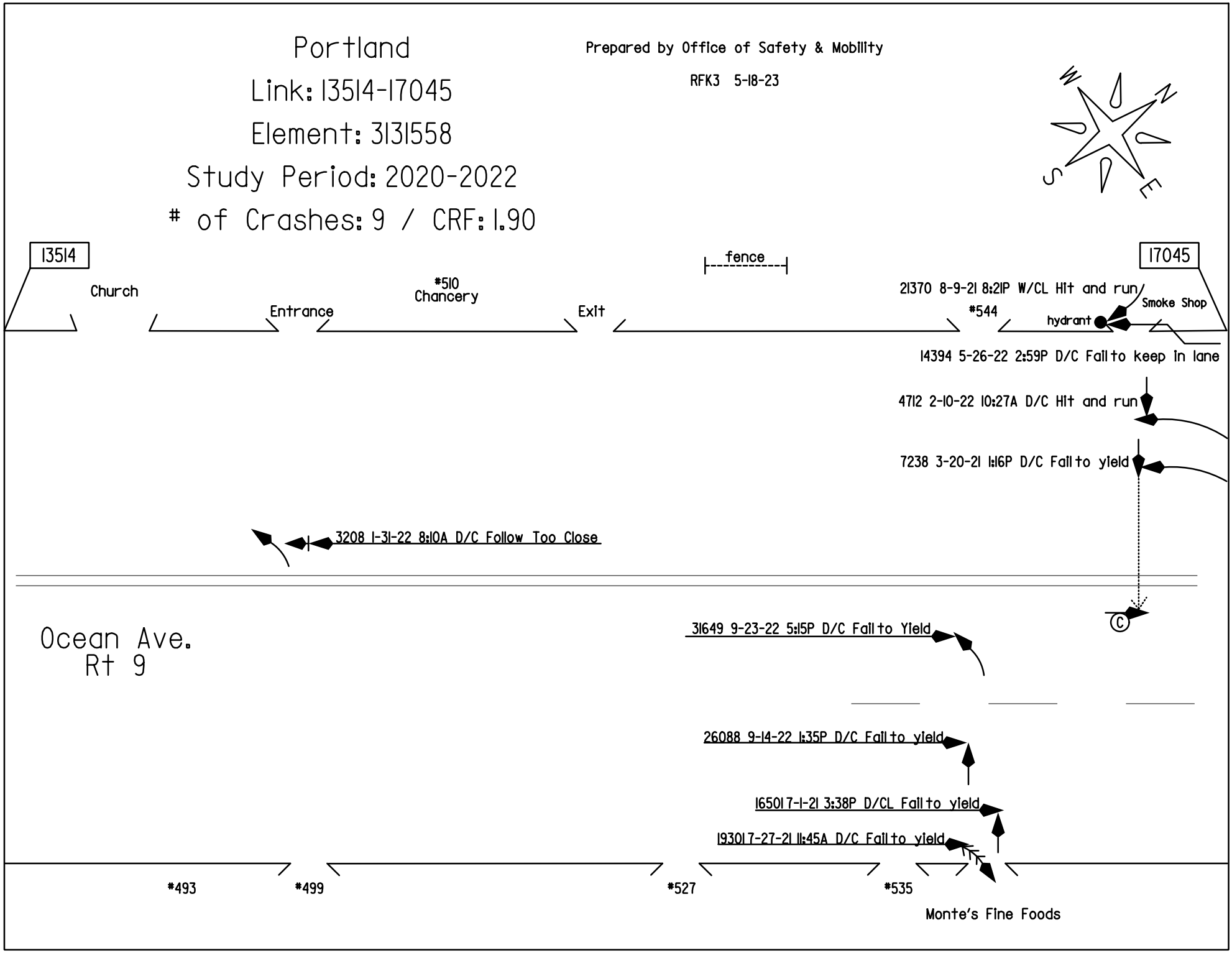
DESCRIPTION: **Ocean Ave from Catafalque Dr to Washington Ave**

RTE # / RD #: **0009X** DATE DRAWN: **5/18/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **779.51** CRF: **1.9** % INJURY: **11.1** TOTAL CRASHES: **9**




Portland
Link: 13514-17045
Element: 3131558
Study Period: 2020-2022
# of Crashes: 9 / CRF: 1.90
Prepared by Office of Safety & Mobility
RFK3 5-18-23
W
N
S
E
13514
17045
fence
Church
Entrance
#510
Chancery
Exit
21370 8-9-21 8:21P W/CL Hit and run
#544
hydrant
Smoke Shop
14394 5-26-22 2:59P D/C Fail to keep in lane
4712 2-10-22 10:27A D/C Hit and run
7238 3-20-21 1:16P D/C Fail to yield
3208 1-31-22 8:10A D/C Follow Too Close
Ocean Ave.
Rt 9
31649 9-23-22 5:15P D/C Fail to Yield
26088 9-14-22 1:35P D/C Fail to yield
16501 7-1-21 3:38P D/CL Fail to yield
19301 7-27-21 11:45A D/C Fail to yield
#493
#499
#527
#535
Monte's Fine Foods

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

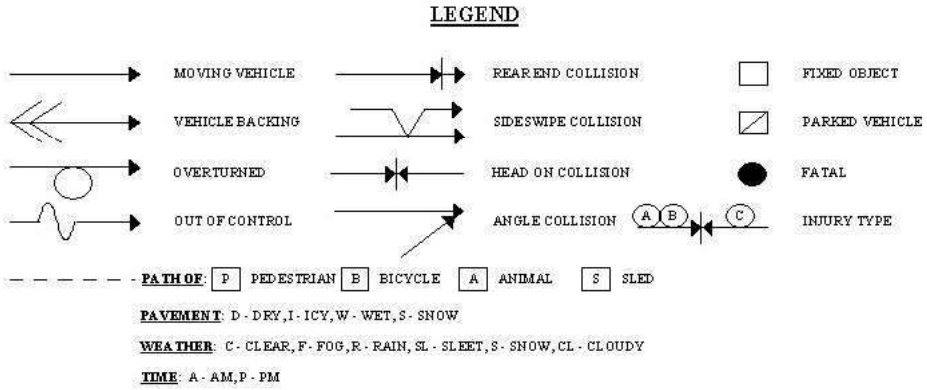
LOW NODE: **17036** HIGH NODE: **18737** REGION: **1** U/R: **URBAN**

DESCRIPTION: **Washington Ave from Galvin St to Bates St**

RTE # / RD #: **0026X** DATE DRAWN: **5/12/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **501.51** CRF: **1.15** % INJURY: **37.5** TOTAL CRASHES: **8**



Prepared by Office of Safety & Mobility

RFK3 5-12-23

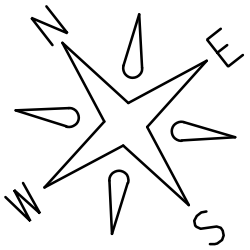
Portland

Link: 17036-18737

Element: 3123985

Study Period: 2020-2022

of Crashes: 8 / CRF: 1.15



17036

Driveway #521

18737

pole (B)

7801 3-28-21 9:00A D/CL Sick

6794 2-27-22 2:33P D/C Reckless driving (C)(C)(C)

19629 8-18-20 4:25P D/C Fail to Yield

30654 11-8-21 5:18P D/C Fail to Yield

31026 10-26-22 12:27P W/R Fail to yield

(B) 24542 9-15-21 12:21P D/CL Follow too close

laid down moped

10613 3-31-22 5:32P D/CL Fail to Yield

16740 6-20-20 10:30P D/C Hit and run

Washington Ave. (Rte. 26)

Driveway

Driveway

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

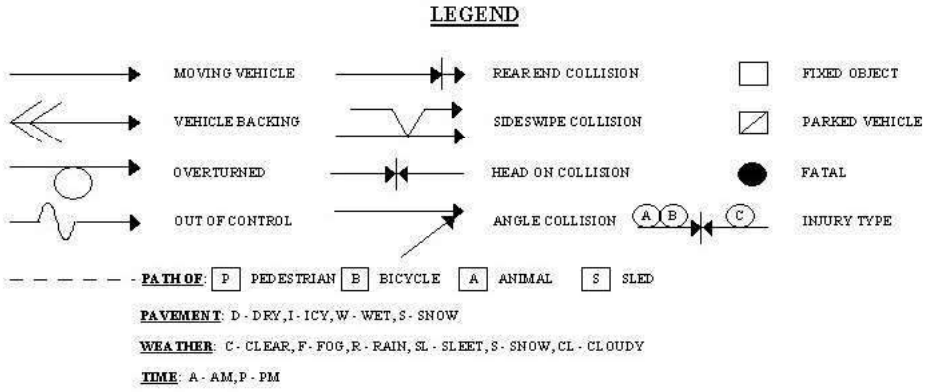
LOW NODE: **17038** HIGH NODE: **17039** REGION: **1** U/R: **URBAN**

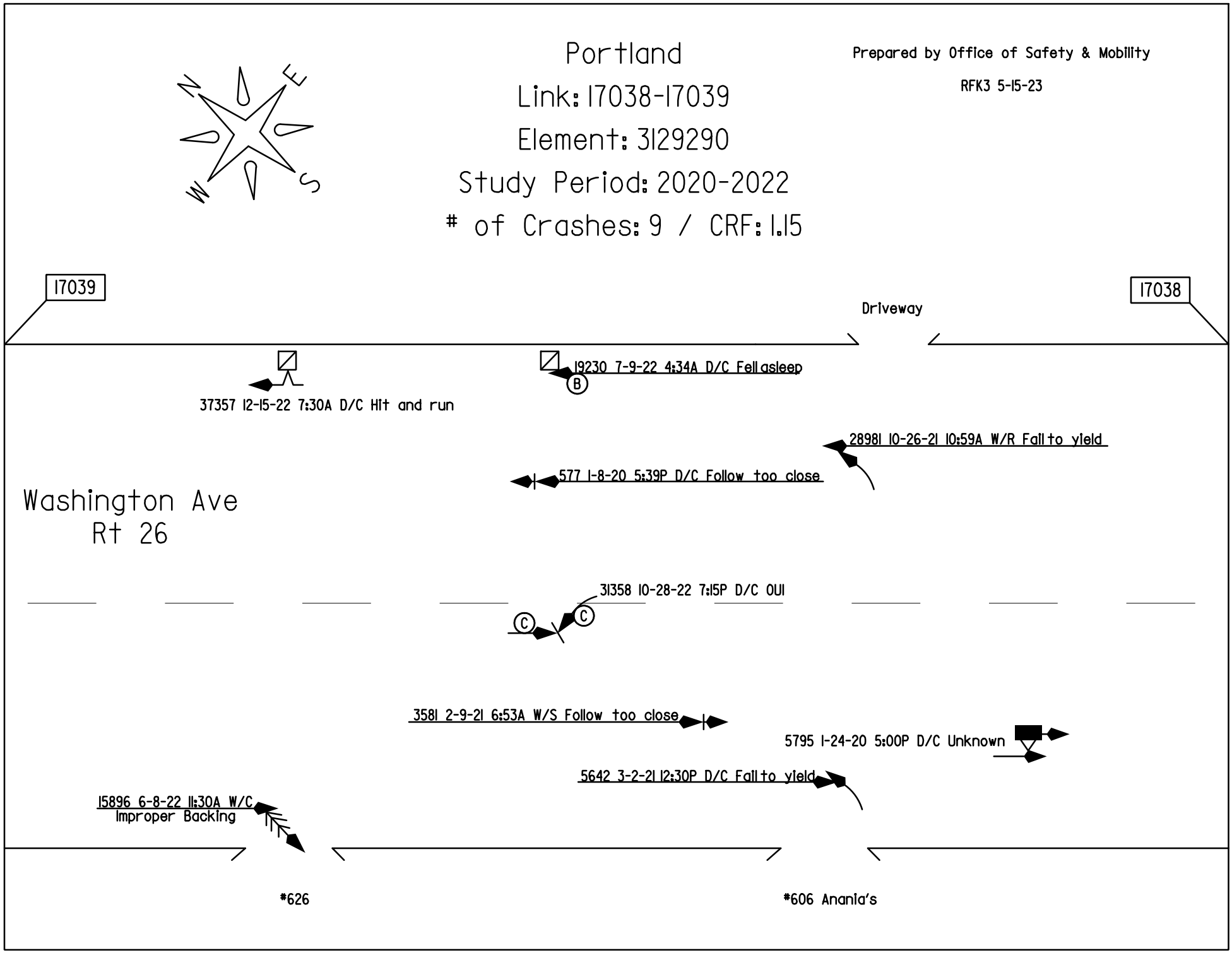
DESCRIPTION: **Washington Ave from Presumpscot St to Cummings**

RTE # / RD #: **0026X** DATE DRAWN: **5/15/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **480.15** CRF: **1.15** % INJURY: **22.2** TOTAL CRASHES: **9**




Portland
Link: 17038-17039
Element: 3129290
Study Period: 2020-2022
# of Crashes: 9 / CRF: 1.15
Prepared by Office of Safety & Mobility
RFK3 5-15-23
N
E
S
W
17039
17038
Driveway
37357 12-15-22 7:30A D/C Hit and run
19230 7-9-22 4:34A D/C Fellasleep
B
28981 10-26-21 10:59A W/R Fail to yield
577 1-8-20 5:39P D/C Follow too close
Washington Ave
Rt 26
31358 10-28-22 7:15P D/C OUI
C
C
3581 2-9-21 6:53A W/S Follow too close
5795 1-24-20 5:00P D/C Unknown
5642 3-2-21 12:30P D/C Fail to yield
15896 6-8-22 11:30A W/C
Improper Backing
#626
#606 Anania's

H. C. L.
CRASH COLLISION DIAGRAM
DATA PACKAGE

COUNTY: **CUMBERLAND** TOWN: **PORTLAND**

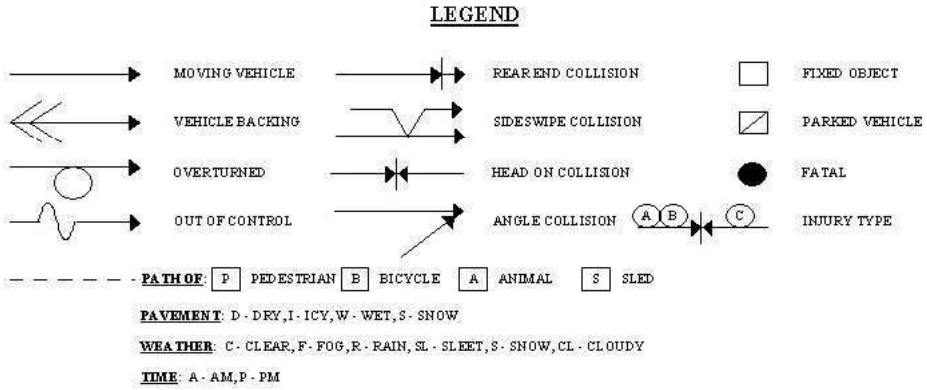
LOW NODE: **17045** HIGH NODE: **17046** REGION: **1** U/R: **URBAN**

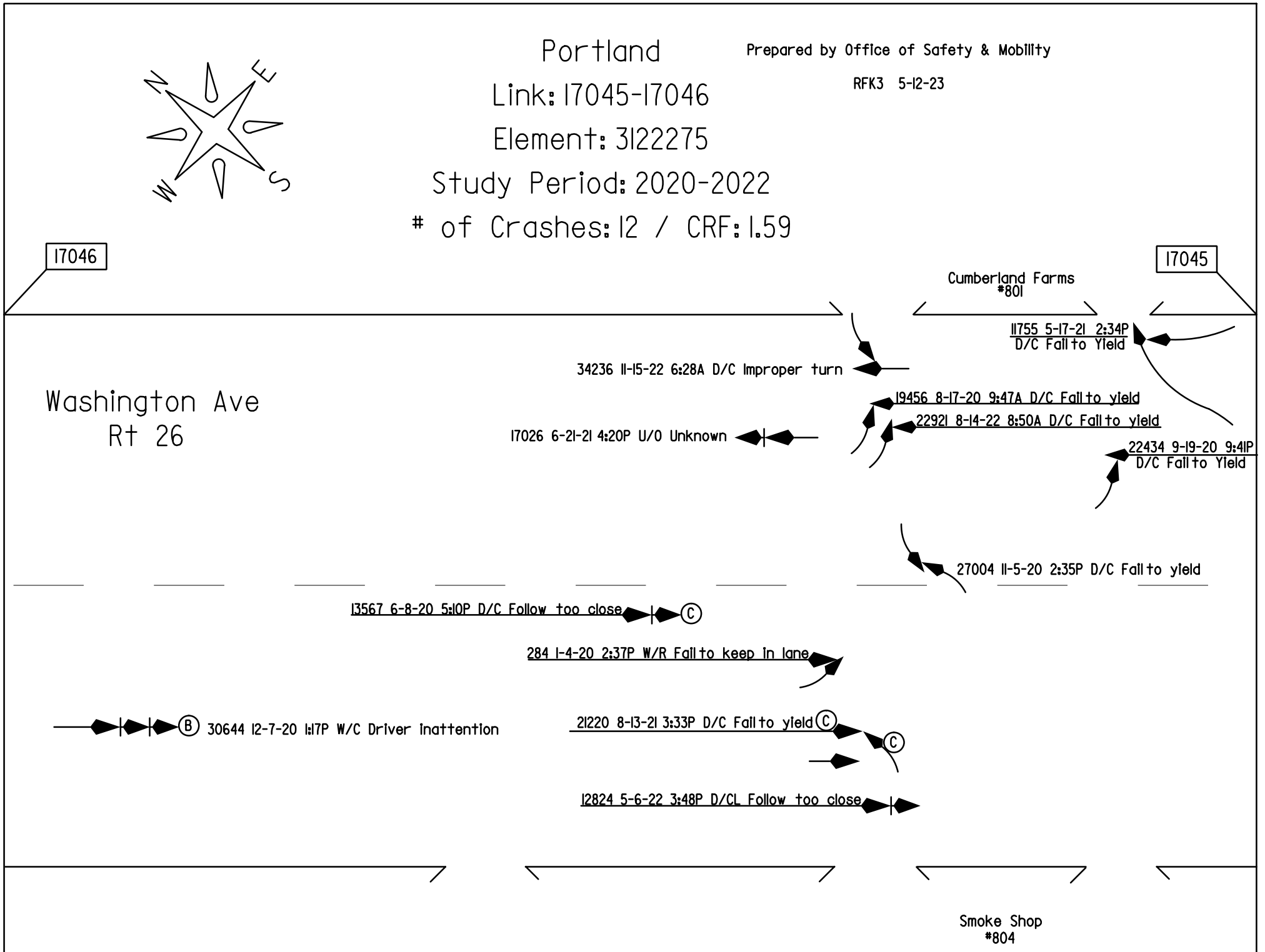
DESCRIPTION: **Washington Ave from Ocean Ave to Byfield Rd**

RTE # / RD #: **0026X** DATE DRAWN: **5/12/2023** DRAWN BY: **BOB K**

STUDY FROM: **1/1/2020** STUDY TO: **12/31/2022**

CRASH RATE: **673.57** CRF: **1.59** % INJURY: **25** TOTAL CRASHES: **12**




Portland
Link: 17045-17046
Element: 3122275
Study Period: 2020-2022
# of Crashes: 12 / CRF: 1.59
Prepared by Office of Safety & Mobility
RFK3 5-12-23
N
E
S
W
17046
17045
Cumberland Farms
#801
11755 5-17-21 2:34P
D/C Fail to Yield
34236 11-15-22 6:28A D/C Improper turn
19456 8-17-20 9:47A D/C Fail to yield
22921 8-14-22 8:50A D/C Fail to yield
17026 6-21-21 4:20P U/O Unknown
22434 9-19-20 9:41P
D/C Fail to Yield
Washington Ave
Rt 26
27004 11-5-20 2:35P D/C Fail to yield
13567 6-8-20 5:10P D/C Follow too close
C
284 1-4-20 2:37P W/R Fail to keep in lane
B
30644 12-7-20 1:17P W/C Driver Inattention
21220 8-13-21 3:33P D/C Fail to yield
C
C
12824 5-6-22 3:48P D/CL Follow too close
Smoke Shop
#804

3

Section 3: Development Entrances and Exits

3.A Entrance and Exit Locations

The site is located in the East Deering neighborhood of Portland, bounded by I-295, Sherwood Street, and Casco Bay. The site will be accessed directly off Sherwood Street into the proposed campus. All driveway locations are illustrated on the site plans as attachments to Section 1.

There are currently no existing bicycle accommodations on Sherwood Street, and incomplete sidewalks on Sherwood Street leading into the site. The Roux Institute is committed to improving Sherwood Street to accommodate bicycles and pedestrians in separate facilities (i.e. bike lanes and sidewalk) where possible with potential shared accommodations through the limited cross section under the I-295 bridge.

3.B Plan View

Attachment 1A shows the proposed site plan. As shown, the primary entrance to the site is via the end of Sherwood Street.

3.C Stopping Sight Distances

Since access to the site is an extension of Sherwood Street, sight lines are not applicable as vehicles enter and exit the site.

3.D Entrance/Exit Compliance with Design Requirements

Entrances and exits were designed to meet all the criteria specified in the City of Portland's Standard Details and Drawings.

4

Section 4: Title, Right, or Interest

4.A Evidence of Title, Right, or Interest

The proposed development is located on properties owned by the Applicant and identified as the following:

- 1 Beanpot Circle – 447 A001001

Attached are copies of the deeds associated with the property as well as a purchase and sales agreement between IDEALS and Northeastern University.

4.B Attachments

Attachment 4A Deed and Purchase and Sale Agreement

Attachment 4A

Deed and Purchase and Sale Agreement

[Execution Copy]

AGREEMENT FOR THE PURCHASE AND SALE OF REAL ESTATE

THIS AGREEMENT is effective as of August 30, 2021, by and between **B&G Foods North America, Inc.**, a Delaware Corporation (successor to **Heritage Acquisition Corp.**, herein "Heritage"**)** having a mailing address of 4 Gatehall Drive, Suite 110, Parsippany, New Jersey 07054 ("Seller") and **The Institute for Digital Engineering And Life Sciences**, a Maine non-profit corporation with an address of 100 Commercial Street, Portland, Maine 04101("Buyer"), WHO AGREE AS FOLLOWS:

WITNESSETH AS FOLLOWS:

1. PURCHASE AND SALE. Seller agrees to sell and Buyer agrees to buy, on the terms and conditions hereinafter set forth, approximately 13 acres of land and buildings generally situated at 1 Bean Pot Circle, Portland, Maine, together with all improvements thereon (except as specified below) and all rights and easements appurtenant thereto, which parcel is more particularly referenced by the City of Portland Assessor's Office as Map 447 Lot A001 and Lot A002 (although there is no separate assessed value or tax bill for Lot A-002) and described in certain deeds to Heritage recorded in the Cumberland County Registry of Deeds in Book 14616, at Page 50 and 14616, at Page 57, together with and including all of Seller's interest in abutting or adjacent tidal flats, intertidal lands, and State of Maine Submerged Lands Lease No. 0637-L-34 (together the "Property"). A survey purporting to show the Property as it existed in February of 1999 is recorded in said Registry in Plan Book 199, Page 159.

2. NO CONTINGENCIES. Prior to execution of the Agreement Buyer has completed such due diligence investigations relating the Property as it determined in is discretion to be desirable and it is expressly understood and acknowledged by Buyer that this Agreement and Buyer's obligations hereunder are not contingent or conditioned upon any further due diligence or other investigations. It is also expressly understood and acknowledged by Buyer that this Agreement and Buyer's obligations hereunder are not contingent or conditioned upon obtaining any zoning changes or any governmental permits or approvals or upon obtaining a commitment for or closing any financing for any portion of the Purchaser Price or for any costs to be incurred by Buyer after the Closing.

3. PURCHASE PRICE. Subject to any adjustments and prorations hereinafter described, Buyer agrees to pay for the Property the sum of [redacted] Dollars and 00/100 ($[redacted]) (the "Purchase Price"), payable as follows:

(a) Deposit. The sum of [redacted] Dollars ($[redacted]) as a deposit (the "Deposit") shall be paid to Seller directly within one (1) business day of Seller's acceptance hereof and held in escrow by Seller, which Deposit shall be credited towards the Purchase Price at the closing. The Deposit shall be non-refundable except in the case of Seller's default hereunder.

(b) Closing. The balance of the Purchase Price, [redacted] Dollars ($[redacted]), as adjusted for pro-rations and any other payments referenced herein, shall be paid to Seller at the closing in immediately available funds by a wire transfer to Seller (in accordance with wiring instructions provided to Buyer in writing within a reasonable time prior to the time of closing).

4. TITLE. Seller shall convey the Property to Buyer at the closing in fee simple with good, marketable and insurable title, free and clear of liens and encumbrances and other matters of record except as disclosed in Buyer's Title Commitment issued by Monument Title Company as agent for CATIC, Commitment No. 031521-01 dated March 16, 2021, a copy of which has been provided to Seller. Seller shall deliver the Property free and clear of any leases or occupancies except as otherwise provided herein.

5. CLOSING. Buyer acknowledges the need for the Seller to continue operations at the Property for a period following the date hereof and that Seller will need an additional period after operations cease to remove equipment and perform its other obligations under Section 7 hereof. The Closing Date shall be set forth in a notice to Buyer from Seller based on its schedule for ceasing operations and completing such obligations, provided however, that the closing shall take place in any event at the offices of Bernstein, Shur, Sawyer and Nelson, 100 Middle Street, Portland, Maine, no later than December 31, 2021 (the "Closing Date") or at such earlier or later date and location as Buyer and Seller shall mutually agree in advance and in writing. At the closing, Seller shall execute and/or deliver to Buyer, against payment of the purchase price: (a) a Quitclaim Deed with Covenant to the Property, in accordance with the Short Form Deeds Act, 33 M.R.S.A. § 761 et seq., (the "Deed"), (b) all keys, access cards, security codes and similar items to the Property in Seller's possession and (c) a Bill of Sale (without warranty) for five (5) large steel bean pots of the size and type historically used for the cooking of baked beans (the "Bean Pots"). Seller further agrees to execute and deliver to or cause to be delivered to Buyer and/or its designees at the closing such documents, affidavits and certificates as are otherwise required by this Agreement, required by law and/or reasonably necessary for Buyer's acquisition of the Property, including without limitation a Certificate of Non-Foreign Status (as required by Internal Revenue Service regulations), an affidavit regarding underground storage tanks (as required by Maine Law), applicable Maine State REW forms and satisfactory evidence of Seller's existence and authority to convey the Property. At the closing Seller and Buyer shall execute assignment and assumption agreements that transfer to Buyer, and pursuant to which Buyer assumes all obligations arising after the Closing Date under: (i) the State of Maine Submerged Lands Lease No. 0637-L-34, (ii) the Commercial Lease between Seller as Landlord and [redacted] as tenant relating to a portion of the Property, (iii) Maine Department of Environmental Protection Air Emission License A-77-71-M-R (SM) relating to the Property and (iv) Maine Department of Environmental Protection Maine Pollutant Discharge Elimination System Permit and Waste Discharge License ME0001741 W000980-5R-H-R relating to the Property. The documents to be executed and delivered at the closing as described in this Section are sometimes herein called the "Closing Documents."

6. RISK OF LOSS, DAMAGE AND INSURANCE.

(a) All risk of loss to the Property prior to the closing shall be borne by Seller. Seller shall keep the Property insured against fire and other extended coverage risks as currently insured until the closing and shall name Buyer as an additional insured as its interest may appear.

(b) In the event that, prior to the closing, any part of the Property is damaged by fire or other casualty, then Seller and Buyer shall perform their respective obligations under this Agreement and at closing, Seller shall (x) deliver to Buyer at the Closing any insurance proceeds or condemnation awards received by Seller in respect of or allocable to the Property less any amount for the cost repairs performed by Seller prior to Closing; and (y) assign to Buyer all of Seller's interest in and to any insurance proceeds and/or condemnation awards allocable to the Property which have not yet been received by Seller on that date less any amount for the cost repairs performed by Seller prior to Closing; and (z) refrain from accepting or agreeing upon the amount of any payment of any proceeds or awards without Buyer's prior written consent, which consent shall not be unreasonably withheld. Seller agrees that it shall limit any repairs to be paid from insurance proceeds to repairs needed to continue operations at the Property through the scheduled date for ceasing such operations and thereafter shall be limited to securing the damaged area.

7. PRE-CLOSING OBLIGATIONS.

(a) Although Buyer has completed all of its due diligence investigations, it may have reason for its architects, engineers and consultants to enter upon or in any part of the Property for purposes of taking measurements and similar actions needed to prepare plans for work to be done after the closing or to complete applications for permits and approvals related to such work. Seller agrees to reasonably grant permission to any such entry by Buyer's architects, engineers and consultants provided that (i) such entry will be scheduled in advance through Seller's representative and shall be subject to reasonable restrictions to prevent any interference with Seller's operations or the performance of the obligations set forth in this Section 7, (ii) Buyer shall indemnify and hold Seller harmless from and against any property damage or personal injury claim or any mechanics' lien against the Property that arises out of or in connection with such entry by Buyer's architects, engineers and consultants, and (iii) Buyer's architects, engineers and consultants entering the Property shall carry liability insurance in commercially reasonable amounts, naming Seller as an additional insured and certificates of such insurance in form satisfactory to Seller shall be delivered to Seller prior to any such entry.

(b) Buyer has already conducted due diligence of the Property including environmental site assessments (ESAs) prior to the date hereof and accepts the Property in its as-is condition except as specifically set forth herein. In the event that Seller obtains knowledge of any spill or release of hazardous materials on the Property that occurred after the date hereof and prior to the Closing Date it shall promptly notify Buyer and undertake any remedial actions related thereto that are required by applicable law and the Closing Date hereunder shall be extended to the extent reasonably necessary to complete any such remedial actions.

(c) Seller agrees to pay all contractors and other persons engaged by it to perform work on the Property between the date hereof and the Closing as necessary to prevent any mechanics' liens from being recorded against the Property pursuant to 10 M.R.S.A. §3251. If Seller's title to the Property is further encumbered, Seller shall promptly after obtaining knowledge of any such encumbrances take actions necessary to have such encumbrance released prior to closing, and the Closing Date hereunder shall be extended to the extent reasonably necessary to

obtain such release. The foregoing is not a consent or permission to further encumber the title and Seller specifically agrees it shall not voluntarily further encumber the title to the Property.

(d) Prior to closing Seller shall take all actions required by the federal Worker Adjustment and Retraining Notification Act of 1988 and 26 M.R.S.A. §625-B (together, the "Plant Closure Laws") with respect to the closing of Seller's operations at the Property and shall relocate or terminate the employment of all of its employees working at the Property. Seller shall be solely responsible, and Buyer shall have no obligations whatsoever for, any compensation, severance pay or other amounts payable to any current or former employee of Seller as a result to the closing of Seller's operations at the Property, whether under the Plant Closure Laws (or by reason of Seller's breach thereof), collective bargaining agreements or any applicable employee benefit plans (collectively, "Plant Closure Liabilities"). In the event that Buyer receives notice of the commencement of any action by any person who is not a party to this Agreement or an affiliate of a party claiming that Buyer is liable for any Plant Closure Liabilities due to the fact that Buyer is a successor owner of the Property ("Third Party Claims"), Buyer shall promptly notify Seller and Seller shall indemnify Buyer against any losses damages, costs or expenses (including reasonable attorneys' fees) arising from such Third Party Claims. The provisions of this Section 7(d) are solely for the benefit of Buyer, and nothing herein, express or implied, shall confer upon any employee or former employee of Seller or other person any rights or remedies of any nature whatsoever under or by reason of this this Section 7(d) and nothing contained herein shall be construed to establish, amend or modify any benefit plan, program, agreement or arrangement.

(e) Prior to Closing Seller shall remove all of its production equipment (other than the Bean Pots) and other personal property from the Property, including all trash and debris. At the closing Seller shall deliver possession of the Property to Buyer free and clear of all leases and tenancies other than the Lease to [redacted]. In the event that during the process of removing such personal property Seller discovers any plans, specifications or reports relating to the improvements on the Property that might be useful to Buyer in connection with the renovation or maintenance of such improvements, Seller shall deliver such materials to Buyer prior to the Closing.

(f) In the event that some specific portion of the Seller's obligations set forth in this Section 7 has not been completed as of the Closing Date (other than Section 7(d) which is addressed by the indemnification provision therein) and the parties are able to agree on the estimated cost of completing such uncompleted obligations, the parties may enter into an escrow agreement (the "Escrow Agreement") pursuant to which a portion of the Purchase Price equal to such estimated cost will be held in escrow by a mutually acceptable escrow agent as security for such completion after the Closing Date (the "Escrow Funds"). If the Seller and Buyer do not execute any such Escrow Agreement, the provisions set forth in Section 10(a) shall be applicable with respect to any such uncompleted obligations. Any such Escrow Agreement shall include provisions relating to the remedies available to the parties if the uncompleted obligations are not completed as set forth therein and for the payment to Seller of any unused balance of the Escrow Funds.

8. "AS IS" SALE; RELEASE OF CLAIMS.

(a) Except for Seller's representations and warranties set forth in Section 9, Seller makes no express or implied representation or warranty with respect to the Property, and Buyer agrees that except for Seller's representations set forth in Section 9, and Seller's covenants set forth in Section 7, Buyer is not relying on and has not relied on any statements, promises, information or representations made or furnished by Seller or by any real estate broker, agent or any other person representing or purporting to represent Seller but rather is relying solely on its own expertise and on the expertise of its consultants and on the inspections and investigations Buyer and its consultants have conducted.

(b) Buyer hereby acknowledges and agrees that the acceptance of the Deed and the other Closing Documents by Buyer shall be deemed to be full performance and discharge of every agreement and obligation on the part of Seller to be performed under this Agreement except those, if any, which are herein specifically stated to survive delivery of the Deed and the Closing Documents. No agreement or representation or warranty made in this Agreement by Seller will survive the Closing and the delivery of the Deed or Closing Documents, unless expressly provided otherwise, provided that for the avoidance of doubt, Seller is bound to perform its obligations under Section 7 hereof and Buyer's remedies with respect thereto will survive the Closing to the extent provided in Section 10(a).

(c) EXCEPT AS SPECIFICALLY SET FORTH TO THE CONTRARY IN THIS AGREEMENT, INCLUDING, BUT NOT LIMITED TO, SELLER'S OBLIGATIONS UNDER SECTION 7 HEREOF, BUYER AGREES (A) TO TAKE THE PROPERTY "AS IS, WHERE IS, WITH ALL FAULTS" AND (B) THAT NO REPRESENTATIONS OR WARRANTIES ARE MADE OR RESPONSIBILITIES ASSUMED BY SELLER AS TO THE CONDITION OF THE PROPERTY, AS TO THE TERMS OF ANY LEASES OR OTHER DOCUMENTS OR AS TO ANY INCOME, EXPENSE, OPERATION OR ANY OTHER MATTER OR THING AFFECTING OR RELATING TO THE PROPERTY, NOW OR ON THE CLOSING DATE. BUYER AGREES TO ACCEPT THE PROPERTY IN THE CONDITION EXISTING ON THE CLOSING DATE, SUBJECT TO ALL FAULTS OF EVERY KIND AND NATURE WHATSOEVER WHETHER LATENT OR PATENT AND WHETHER NOW OR HEREAFTER EXISTING. BUYER ACKNOWLEDGES THAT AS OF THE CLOSING DATE, BUYER WILL HAVE INSPECTED THE PROPERTY AND OBSERVED ITS PHYSICAL CHARACTERISTICS AND CONDITIONS AND WILL HAVE HAD THE OPPORTUNITY TO CONDUCT SUCH INVESTIGATIONS AND STUDIES ON OR OVER THE PROPERTY AND ADJACENT AREAS AS IT DEEMS NECESSARY AND, EXCEPT FOR THE EXCEPTED CLAIMS (AS DEFINED BELOW), HEREBY WAIVES ANY AND ALL OBJECTIONS TO OR COMPLAINTS REGARDING THE PROPERTY AND ITS CONDITION, INCLUDING, BUT NOT LIMITED TO, FEDERAL, STATE OR COMMON LAW-BASED ACTIONS AND ANY PRIVATE RIGHT OF ACTION UNDER STATE AND FEDERAL LAW TO WHICH THE PROPERTY IS OR MAY BE SUBJECT, INCLUDING, BUT NOT LIMITED TO, CLAIMS RELATING TO PHYSICAL CHARACTERISTICS AND EXISTING CONDITIONS, INCLUDING STRUCTURAL AND GEOLOGICAL CONDITIONS, SUBSURFACE SOIL AND WATER CONDITIONS, AND SOLID AND HAZARDOUS WASTE AND HAZARDOUS MATERIALS (AS DEFINED BELOW) ON, UNDER, ADJACENT TO OR OTHERWISE AFFECTING THE PROPERTY. BUYER

FURTHER ASSUMES THE RISK OF CHANGES IN APPLICABLE LAWS AND REGULATIONS RELATING TO PAST, PRESENT AND FUTURE ENVIRONMENTAL CONDITIONS ON THE PROPERTY AND THE RISK THAT ADVERSE PHYSICAL CHARACTERISTICS AND CONDITIONS, INCLUDING THE PRESENCE OF HAZARDOUS MATERIALS OR OTHER CONTAMINANTS, MAY NOT HAVE BEEN REVEALED BY ITS INVESTIGATION.

(d) Except with respect to the Seller's fraud, the Seller's representations set forth in Section 9, Buyer's remedies for defaults in Seller's obligations under Section 7 as described in Section 10(a), or as otherwise expressly provided in this Agreement, Buyer hereby fully and forever waives, and Seller hereby fully and forever disclaims and shall not be liable or bound in any manner by, any and all warranties, guarantees, promises, statements, representations or information of whatever type or kind with respect to the Property, whether express, implied or otherwise, including warranties of fitness for a particular purpose, tenantability, habitability or use. Buyer agrees that except for any Claims (as defined below) arising out of a breach of any of Seller's representations and warranties in Section 9 or the Closing Documents executed by Seller and any and all Claims for fraud by Seller ("Excepted Claims"), Buyer and anyone claiming by, through or under Buyer hereby waives its right to recover from and fully and irrevocably releases Seller and Seller's employees, officers, directors, trustees, shareholders, members, partners, representatives, agents, servants, attorneys, affiliates, parents, subsidiaries, successors and assigns ("Released Parties") from any and all claims, responsibility and/or liability that it may now have or hereafter acquire against any of the Released Parties for any and all costs, losses, claims, liabilities, damages, expenses, demands, debts, controversies, claims, actions or causes of actions (collectively, "Claims") arising from or related to the condition (including any construction defects, errors, omissions or other conditions, latent or otherwise, and the presence in the soil, air, structures and surface and subsurface waters of materials or substances that have been or may in the future be deemed to be Hazardous Materials or otherwise toxic, hazardous, undesirable or subject to regulation and that may need to be specifically treated, handled and/or removed from the Property under current or future federal, state and local laws, regulations or guidelines or common law), valuation, salability or utility of the Property, condition of title to the Property, compliance with any applicable federal, state or local law, rule or regulations or common law with respect to the Property, or the Property's suitability for any purposes whatsoever, and any information furnished by the Released Parties in connection with this Agreement. Buyer will indemnify Seller with respect to any environmental liabilities associated with the Property that may be discovered or arise post-closing, regardless of when the action(s) leading to such liabilities occurred.

(e) Seller and Buyer have agreed upon the Purchase Price relating to the Property and other provisions of this Agreement in contemplation and consideration of Buyer's agreeing to the provisions of this Section 8**,** which Section shall survive the closing and the delivery of the Deed and the Closing Documents.

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

(a) Seller is duly organized and in good standing under the laws of the State of Delaware, with full capacity, power and authority to enter into and fully perform the obligations and transactions contemplated by this Agreement;

(b) The execution and delivery of this Agreement and the performance by Seller of its obligations hereunder are within Seller's corporate powers, and have been duly authorized and approved by all necessary actions on behalf of Seller and will not result in a breach of Sellers's articles of incorporation or bylaws, or any injunction, judgment, court order or agreement to which Seller is a party;

(c) The person executing this Agreement on behalf of Seller is duly authorized to do so and the person who will execute the Deed and the other Closing Documents on behalf of Seller will be duly authorized to do so;

(d) To the best of Seller's knowledge, no consent, approval, order or authorization of any court or other governmental entity is required to be obtained by Seller in connection with the execution and delivery of this Agreement or the performance hereof by Seller, other than (i) approvals by the Maine Department of Environmental Protection relating to the transfers of the Air Emission License and the Pollutant Discharge Elimination System Permit and Waste Discharge License relating to the Property and (ii) approval from the Maine Department of Agriculture, Conservation and Forestry relating to the transfer of the Submerged Lands Lease;

(e) There are no litigation, liens, judgments, violations, or proceedings pending, or to the best of Seller's knowledge, threatened in writing against or relating to the Property nor does Seller know or have reasonable grounds to know of any basis for any such action, or of any governmental investigation relating to the Property, and there is no other litigation pending or to the best of Seller's knowledge, threatened in writing against Seller, which if determined adversely would restrain the consummation of the transaction contemplated by this Agreement or would declare illegal, invalid or non-binding any of the obligations or covenants of Seller hereunder;

(f) Seller is not a "foreign person" within the meaning of §1445 of the Internal Revenue Code; and

(g) To the best of Seller's knowledge, there are no purchase options or rights of first refusal relating to any portion of the Property and there are no contracts or agreements between Seller and third parties relating to the Property (other than the Lease to [redacted]) which will be binding on Buyer after the Closing.

For purposes of this Agreement and any Closing Document executed by Seller the phrases "to the best of Seller's knowledge," or the "knowledge" of Seller, or words of similar import are used, they shall be deemed to refer to the actual knowledge of Bruce Wacha or Tyler Wallace, without any independent investigation. The provisions of this Section 9 shall survive the closing and the delivery of the Deed and the Closing Documents for a period of twelve (12) months.

10. DEFAULT AND REMEDIES.

(a) In the event that Seller defaults in the performance of its obligations under Section 7 hereof, Buyer may send Seller a default notice specifying such default at least five (5) days

prior to the scheduled Closing Date. Seller may respond to any such default notice by agreeing to cure such default in which case the Closing Date will be postponed for a period of time not to exceed thirty (30) days in order for Seller to perform such cure. If Seller fails to cure any default set forth in such notice prior to Closing, or if Seller fails to remove any mechanics' liens as required by Section 7(c) whether or not a default notice with respect thereto was given prior to Closing, Buyer's sole remedy shall be to pursue a claim against Seller for actual damages caused by such default including, without limitation, reasonable attorneys' fees, but excluding incidental or consequential damages, and Buyer's right to pursue such a damage claim for such defaults under Section 7 shall survive the closing and the delivery of the Deed and the Closing Documents for a period of twelve (12) months.

(b) In the event that Seller defaults in the performance of its obligation to convey the Property to Buyer hereunder, Buyer's sole remedy shall be to within sixty (60) days of when the Closing Date was to have occurred, to commence and diligently prosecute an action in the nature of specific performance. If such an action in the nature of specific performance is not so commenced within said time, or is unsuccessful, Seller shall refund the Deposit and upon payment of such refund the parties will be released from their obligations under this Agreement. Under no circumstances will Buyer have available to it any remedy that includes the termination of this Agreement or (except as provided in Section 10(a) above) an action at law or otherwise for damages.

(c) In the event that Buyer defaults in its obligation to close hereunder, Seller shall retain the Deposit, as full and complete liquidated damages in lieu of any other legal or equitable remedy, and this Agreement will terminate and neither party will be under any further obligation hereunder. The parties acknowledge that Seller's damages due from Buyer's default hereunder are difficult or impossible to ascertain and that the amount of the Deposit represents a reasonable estimate by both parties of Seller's damages.

11. OFF MARKET. Seller may not list or offer the Property for sale and shall not seek, accept, solicit or negotiate any third party offers for all or any portion of the Property while this Agreement is in effect. This Section does not limit Seller's right to sell its equipment or other personal property located at the Property to others.

12. BROKERAGE. The parties agree that no broker has been involved in this transaction other than Tony McDonald of The Boulos Company ("Broker") representing Buyer, and each agrees to indemnify the other from and against any damages, costs or expenses (including reasonable attorneys' fees) that the other party may suffer as a result of claims made or suits brought by any other broker, finder or agent in connection with this transaction, the obligated party hereunder to be the party whose conduct gives rise to such claims. This indemnity shall survive the closing and any termination of this Agreement. Buyer shall be responsible for and shall pay directly any commission owing to Broker.

13. ADJUSTMENTS, PRORATIONS AND CLOSING COSTS.

(a) Real estate taxes, assessments, rentals, fuel oil, and utilities shall be prorated as of the date of closing based upon amounts thereof actually paid or received (as the case may be) as of the Closing Date.

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

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

(d) A portion of the purchase price shall be withheld at the closing by Buyer if required by 36 M.R.S.A. § 5250-A unless Seller furnishes to Buyer an affidavit stating, under penalty of perjury, that Seller is a resident of Maine or that the transfer is otherwise exempt from withholding tax.

(e) If the parties enter into an Escrow Agreement as described in Section 7(e), a portion of the purchase price equal to the Escrow Funds will be paid to the escrow agent named therein.

14. MISCELLANEOUS.

(a) Time. Time is of the essence of this Agreement.

(b) Notices. Any notices required or permitted to be given under this Agreement shall be sufficient if in writing and if sent: (i) by first class mail, postage prepaid, registered or certified, return receipt requested; (ii) by hand delivery; (iii) by FedEx, or similar overnight express mail service, prepaid; or (iv) by electronic mail transmission, each to the addresses listed below:

TO SELLER: B&G Foods North America, Inc.
4 Gatehall Drive
Parsippany, NJ 07054
Attention: Mr. Bruce Wacha,
Executive Vice President and Chief Financial Officer
Email: Bruce.Wacha@bgfoods.com

WITH A COPY TO: B&G Foods North America, Inc.
4 Gatehall Drive
Parsippany, NJ 07054
Attention: General Counsel
Email: corporatesecretary@bgfoods.com

AND WITH A COPY TO: James C. Palmer, Esq.
Verrill Dana, LLP
One Portland Square
Portland, ME 04101-4054
Email: jpalmer@verrill-law.com

TO BUYER: Charles E Hewett, Chief Executive Officer
IDEALS
100 Commercial Street
Portland, ME 04101
chuck.hewett@ideals.org

WITH A COPY TO: James Broder, Esq.
Bernstein Shur
100 Middle Street
PO Box 9729
Portland, ME 04104-5029
jbroder@bernsteinshur.com

All such communication shall be deemed made upon the earlier of (3) business days following deposit with the U.S. Mail or the date of receipt as disclosed on the return receipt (if sent by registered or certified mail), or upon delivery (if hand delivered), or upon delivery as indicated on the proof of delivery (if sent via FedEx or similar overnight express mail service), or if sent via email with proof of receipt by the primary addressee, effective upon the day sent if received prior to 3:00 p.m. local time or the next business day if received thereafter. With respect to any of the above-referenced methods of delivery, rejection or other refusal to accept or the inability to deliver because of a change of address of which no notice was given shall be deemed to be receipt of the notice sent. Either party may change its address for purposes of this subparagraph by giving the other party notice of the new address in the manner described herein.

(c) Binding Effect/Assignment. This Agreement shall not become a binding contract until signed by both parties and that fact has been communicated to all parties or their agents. This Agreement will inure to the benefit of and bind the respective heirs, successors, personal representatives and assigns of the parties hereto and may be cancelled, modified or amended only by a writing executed by the parties hereto or their legal representatives. Buyer shall have the right to assign its interest hereunder to an entity formed and controlled by Buyer prior to closing, provided that any such assignment shall not release the assignor from any its obligations or liabilities hereunder.

(d) Construction. This Agreement sets forth the entire agreement between the parties, and there are no other agreements or understandings between them related to the subject matter hereof. Without limiting the forgoing, the Non-Binding Letter of Intent dated February 2, 2021 between Seller and Buyer is superseded hereby and neither party shall have any further rights, obligations or claims thereunder. As used in this Agreement, the singular number shall include the plural, the plural the singular, and the use of one gender shall be deemed applicable to all genders. This Agreement shall be governed by and construed in accordance with the laws of Maine. If any provision of this Agreement is determined to be invalid or unenforceable, it shall not affect the validity or enforcement of the remaining provisions hereof.

(e) Counterparts/Electronic Signatures. This Agreement may be simultaneously executed in any number of counterparts, each of which when so executed and delivered shall be an original, but such counterparts shall constitute one and the same instrument. This Agreement may be signed electronically and such shall be treated as original signatures.

(f) Attorney's Fees. If any legal action (including without limitation mediation and arbitration) is brought or compelled by either party to enforce any provisions of this Agreement, the prevailing party shall be entitled to recover from the other party its reasonable attorneys' and paralegals' fees and court costs, subject to and limited by the provisions of the Default and Remedies section of this Agreement.

(g) Effective Date. The Effective Date of this Agreement shall be deemed to be the date first set forth above in this Agreement, provided that if no date is filled in, the Effective Date shall be the last date of the signature of either Buyer or Seller.

[*Balance of page intentionally left blank]*

IN WITNESS WHEREOF, Seller and Buyer have executed this Agreement under seal as of the dates indicated above.

SELLER:

B&G Foods North America, Inc.

By: Bruce C Wacha
Print Name: Bruce C. Wacha
Title: Executive Vice President of Finance and Chief Financial Officer

Date: August 30, 2021

BUYER:

The Institute for Digital Engineering and Life Sciences (IDEALS)

By:_____
Print Name: Dr. Charles E. Hewett
Title: Executive Director

Date: August 30, 2021

IN WITNESS WHEREOF, Seller and Buyer have executed this Agreement under seal as of the dates indicated above.

SELLER:

B&G Foods North America, Inc.

By:_____
Print Name: Bruce C. Wacha
Title: Executive Vice President of Finance and Chief Financial Officer

Date: August 30, 2021

BUYER:

The Institute for Digital Engineering and Life Sciences (IDEALS)

By:_____
Print Name: Dr. Charles E. Hewett
Title: Executive Director

Date: August 30, 2021

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EXECUTION VERSION

AGREEMENT FOR THE PURCHASE AND SALE OF REAL ESTATE

THIS AGREEMENT is effective as of October 23, 2023 by and between **NORTHEASTERN UNIVERSITY**, a Massachusetts non-profit corporation with an address of 360 Huntington Avenue, Boston, Massachusetts 02115 ("Buyer"), and **THE INITIATIVE FOR DIGITAL ENGINEERING AND LIFE SCIENCES**, a Maine non-profit corporation with an address of 100 Commercial Street, Portland, Maine 04101 ("Seller").

RECITALS

WHEREAS, in furtherance and fulfillment of that certain Memorandum of Understanding, dated July 27, 2022 by and between Buyer and Seller (the "MOU"), the Seller desires to sell, transfer and convey to Buyer a certain parcel of land, together with the improvements thereon, located on the easterly side of Interstate 295 and the southerly side of Sherwood Street in the City of Portland, County of Cumberland and State of Maine (the "Campus") as more specifically described herein; and

WHEREAS, the MOU and further agreements by and among Buyer, Seller, and David and Barbara Roux (the "Rouxs") envision that Buyer will develop the Campus for the creation of a graduate institute (the "Institute"):

- instructing students in the fields of artificial intelligence, digital science, data visualization, computational medicine, genomics and life sciences and project management, and develop content and pedagogy therefor,
- conducting research in the fields described above, among others, and
- encouraging innovation and entrepreneurialism among new and established companies deploying the above-mentioned skills and technologies,

WHEREAS, the buyer has agreed to develop the Campus as the permanent home of the Institute with other supporting infrastructure to encourage learning, collaboration, innovation and other progress, and

WHEREAS, it is the intent of the Seller and the Rouxs that the Campus will, over time, become a force for education, research, collaboration and entrepreneurialism meaningful to the 21st century economy, innovation and job creation.

WITNESSETH AS FOLLOWS:

1. PURCHASE AND SALE. Seller agrees to sell and Buyer agrees to buy, on the terms and conditions hereinafter set forth, approximately thirteen (13) acres of land and buildings generally situated at 1 Bean Pot Circle, Portland, Maine together with all improvements that may at the time of closing be thereon (except as specified below) and all rights and easements appurtenant thereto, which parcel is more particularly bounded and referenced by the City of Portland Assessor's Office as Map 447-A-001-001 and 447-A-001-002 and as more fully described on **Exhibit A** attached hereto, being the same premises described in a Quitclaim Deed

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with Covenant from B&G Foods North America, Inc. to Seller, dated March 23, 2022 and recorded in the Cumberland County Registry of Deeds in Book 39282, Page 151 together with and including all abutting or adjacent tidal flats, intertidal lands, and related rights in, to and under any submerged lands easements or leases between Seller and/or any predecessor of Seller with the State of Maine (together the "Property"). The following shall also be delivered and conveyed to Buyer at Closing hereunder:

A. Conveyance of tangible personal property, if any via Bill of Sale.

B. Conveyance of intangible personal property, if any, associated with the Property, to the extent owned by Seller, by Bill of Sale and Assignment.

C. Assignment and Assumption of the Maine Yacht Center lease (the "MYC Lease") of a portion of the Property, in form and substance reasonably acceptable to Buyer.

D. Conveyance/Assignment and Assumption of Submerged Land Easement, which requires notice to the Maine State Bureau of Parks and Lands.

E. Assignment and Assumption of the following MDEP Permits if in effect at the time (for which Buyer shall seek MDEP consent):

i. Maine Department of Environmental Protection Air Emission License A-77-71-M-R(SM)

ii. Maine Department of Environmental Protection Maine Pollutant Discharge Elimination System (MDEPDES) Permit #ME0001741

iii. Maine Waste Discharge License (WDL) License #W000980-5R-H-R.

iv. NRPA Permit (*if any, currently in process*)

(collectively, the "MDEP Permits")

F. Assignment and Assumption of the following City of Portland and/or State permits and approvals:

i. Demolition permit

ii. Any site plan approval and/or building or construction permits

iii. MDOT permits including Traffic Movement Permit

iv. any other issued or pending state, municipal or federal permits or permit applications

(collectively, with the MDEP Permits, the "Governmental Permits")

G. Assignment and Assumption of the construction and development contracts and agreements described on **Exhibit B** (the "Development Contracts").

H. Assignment of any and all warranties relating to any completed contracts for construction or demolition of any of the improvements upon the Campus (the "Construction Warranties"), if any.

I. Assignment of any and all studies, reports, engineering, surveys, appraisals, or other such reports or studies, to the extent assignable (collectively, the "Studies and Reports"), and, if and to the extent requested by Buyer, delivery of reliance letters with respect to such Studies and Reports in a form reasonably acceptable to Buyer. Seller agrees to seek consent to such assignments and any required reliance letters from the professionals or vendors providing the Studies and Reports.

2. OFFER AND ACCEPTANCE. The execution of this Agreement by Buyer represents an offer to Seller on the terms and conditions set forth herein. This offer shall be open for acceptance by Seller until 4:00 p.m. Portland, Maine time on October 23, 2023 unless extended by mutual agreement of Buyer and Seller. Seller's acceptance of this offer shall be evidenced by Seller delivering an executed copy of this Agreement to Buyer at the address set forth in Section 14 below on or before the expiration of this offer. If this offer is not accepted by Seller prior to its expiration, this offer shall automatically expire and this Agreement shall be null and void and of no further force and effect.

3. CONSIDERATION. The consideration for the transfer of the Property is in furtherance and fulfillment of the MOU and the performance under such further agreements by and among Buyer and Seller for Buyer's development of the Property as the site of the Institute for the purposes of instructing students, conducting research, and supporting entrepreneurialism in the fields of artificial intelligence, digital science, data visualization, computational medicine, genomics and life sciences and project management, and develop content and pedagogy therefor, and developing the Property to serve as the permanent home of the Institute with other supporting infrastructure. At closing hereunder, however, the parties shall adjust for any pro-rations and any other payments referenced herein. Except as specified in this Agreement or in any other agreement among the parties including the Rouxs, both Buyer and Seller shall bear their own expenses in connection with the performance of their obligations hereunder. Buyer agrees to pay and Seller agrees to accept One Dollar ($1.00) and other valuable consideration as the Purchase Price for the Property.

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[redacted]

4. TITLE. Seller shall convey the Property to Buyer at the closing in fee simple with good, marketable and insurable title, free and clear of liens and encumbrances and other matters of record, except as disclosed in Buyer's Title Insurance Policy # OP 04921177 ME issued by CATIC (the "Title Insurer"), dated March 24, 2022, a copy of which has been provided to Seller (the "Title Policy"). Seller shall deliver the Property free and clear of any leases or occupancies except as otherwise provided herein. Notwithstanding the foregoing, during the period commencing on the date hereof and continuing for a period of thirty (30 days (the "Inspection Period"), Buyer shall have right to review the title and to make any objections to the title in writing to Seller. Upon receipt of Buyer's title objections, Seller shall have a period of up to thirty (30) days to either (i) resolve the title objections to the reasonable satisfaction of Buyer; (ii) or to propose affirmative title insurance coverage addressing any such title objection that the Title Insurer is willing to provide, including an agreement to continue to provide such affirmative coverage to subsequent grantees and mortgagees; or (iii) to refuse to address such title objection, in which case Buyer may elect to terminate this Agreement, or Buyer may elect to close notwithstanding the title objection.

5. CLOSING. The transfer of title and closing hereunder shall take place at the offices of Bernstein, Shur, Sawyer and Nelson, 100 Middle Street, Portland, Maine, no later than ten days prior to Buyer's application for a building permit for the Buyer's initial phase of construction of the Institute is submitted to the City of Portland (the "Closing Date") or at such earlier date and location as Buyer and Seller shall mutually agree in advance and in writing. Buyer shall have the right to request a closing at any time prior to its application for a building permit, provided that Buyer has satisfied the remaining obligations of Buyer under this Agreement, other than such obligations that Seller has agreed to waive in writing. At the closing,

(a) Seller shall execute and/or deliver to Buyer:

i. a Quitclaim Deed with Covenant to the Property, in accordance with the Short Form Deeds Act, 33 M.R.S.A. § 761 et seq., (the "Deed"),

ii. a Quitclaim with Covenant Bill of Sale conveying the personal property to be conveyed to Buyer as set forth in Section 1.A. above;

iii. all keys, access cards, security codes and similar items to the Property in Seller's possession;

iv. the originals of all permits and licenses relating to the Property, if any, in Seller's possession;

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v. such documents, affidavits and certificates as are otherwise required by this Agreement, required by law and/or reasonably necessary for Buyer's acquisition and financing of the Property, including without limitation a Certificate of Non-Foreign Status (as required by Internal Revenue Service regulations), an affidavit regarding underground storage tanks (as required by Maine Law), a surface/subsurface waste disposal system certificate (if applicable), applicable Maine State REW forms and satisfactory evidence of Seller's existence, authority to convey the Property; and

vi. One or more Assignment and Assumption Agreements signed by Seller to assign to Buyer all of Seller's rights in and to the Maine Yacht Center Lease; the Governmental Permits, the Studies and Reports, the Construction Warranties and the Development Contracts; together with any reliance letters with respect to the Studies and Reports requested by Buyer.

(b) Buyer shall execute and/or deliver to Seller:

i. the purchase price;

ii. evidence that the buyer's Board of Trustees has voted affirmatively to proceed with Phase 1 of the Campus development project (the "Project") and has committed sufficient financial resources to fund Phase 1 of the Project which shall include all work reasonably necessary for the construction of one or more learning, research and collaboration buildings and supporting parking and public infrastructure, construction of a new pier, and renovation of the exterior of the existing historic landmarked Bean Building as shall be further described in the initial Site Plan application (as the same shall be jointly submitted by the parties hereto) as approved by the City of Portland (the contents of which – as approved by the City -- shall be referred to herein as "Phase 1"). Such financial resources may be from various sources including bond financing, Buyer's own resources, pledges and other philanthropic giving and such financial resources as may be available to Buyer over the course of the construction of Phase 1 of the Project as opposed to being fully available at the time of closing;

iii. One or more Assignment and Assumption Agreements signed by Buyer to enable Buyer to assume all of Seller's rights in and to the Maine Yacht Center Lease; the Governmental Permits, the Studies and Reports, the Construction Warranties and the Development Contracts; and

iv. such other documents, affidavits and certificates as are otherwise required by this Agreement, required by law and/or reasonably necessary for Seller's disposition of the Property.

Unless this Agreement is extended by mutual agreement of the parties, if the Closing does not occur for any reason by December 31, 2024, then this Agreement shall automatically terminate and be of

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no further force and effect and all obligations of the parties shall cease other than those specifically identified herein as surviving such termination.

6. RISK OF LOSS, DAMAGE AND INSURANCE.

(a) All risk of loss to the Property prior to the closing shall be borne by Seller. Seller shall keep the Property fully insured against fire and other extended coverage risks until the closing and shall name Buyer as an additional insured as Buyer's interest may appear.

(b) In the event that, prior to the closing, the improvements which are part of the Property are destroyed or, in the opinion of Buyer, substantially damaged, Buyer may either (i) terminate this Agreement, or (ii) accept the insurance proceeds payable by reason of such damage or destruction and close this transaction notwithstanding the same. If any part of the Property is damaged by fire or other casualty and Buyer does not elect to terminate this Agreement pursuant to this Section, then Seller and Buyer shall perform their respective obligations under this Agreement and in the event of a closing, Seller shall (x) deliver to Buyer at the Closing any insurance proceeds or condemnation awards received by Seller in respect of or allocable to the Property; and (y) assign to Buyer all of Seller's interest in and to any insurance proceeds and/or condemnation awards allocable to the Property which have not yet been received by Seller on that date; and (z) refrain from accepting or agreeing upon the amount of any payment of any proceeds or awards without Buyer's prior written consent. Notwithstanding the above, Buyer acknowledges that Seller is in the process of abating and demolishing all of the facilities on the site except for the so-called "Cannery" or "Bean Building"

7. INSPECTION/DELIVERY OF DOCUMENTS; AS-IS CONDITION. Reasonably promptly after this Agreement becomes effective, Seller shall deliver to Buyer copies of all of the Studies and Reports in Seller's possession or control to the extent not already provided to Buyer. With reasonable notice which shall be a minimum of three business days, Seller hereby grants Buyer or its agents the right to enter upon or in any part of the Property at all reasonable times and from time to time prior to the closing in order to inspect the Property, conduct surveys, soil tests, engineering and environmental testing and studies and to do such things as are reasonably necessary with respect to its due diligence, acquisition and development of the Property, provided, however, that Buyer's obligations to close hereunder shall not be conditioned upon the results of such due diligence other than as set forth below.

Buyer has commenced its review of the Studies and Reports, including environmental site assessments (ESAs) performed prior to the date hereof and accepts the Property in its as-is condition except as specifically set forth herein. Notwithstanding the foregoing, Seller shall not, after the date hereof, suffer or allow the occurrence of any further event(s) which would create, constitute, or be considered a recognized environmental condition (REC) under any qualified Phase I ESA without prompt and complete remediation or abatement, or else Seller shall be considered in default hereof. Furthermore, if Seller's title to the Property is further encumbered by any matter or means after the date hereof and such further encumbrance is not cleared prior to Closing, Seller shall be in default hereof. The foregoing is not a consent or permission to further encumber the title and Seller specifically agrees it shall not further encumber the title to the Property nor permit any mortgage, lien, claim, or charge to accrue which shall affect Seller's title.

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Further notwithstanding the foregoing, the parties acknowledge that the environmental site assessments conducted by or for Buyer or for which Buyer has been provided were conducted before certain demolition activities on the site that were performed by or for Seller. Buyer shall have the right to conduct further or updated ESAs and to review any remediation activities undertaken by Seller or its agents or contractors since the date of the ESAs conducted by or for Buyer. In the event that such further or updated ESAs reveal any RECs not previously disclosed to Buyer, Buyer shall have the right to terminate this Agreement or to require that further conditions be satisfied by Seller prior to closing.

Except as set forth in this Agreement, the Property will be conveyed "as is" at the time of closing and Seller disclaims all representations and warranties from Seller to Buyer other than any limited representations set forth herein. Buyer will indemnify Seller with respect to any environmental liabilities associated with the Property that may be discovered or arise post-closing, regardless of when the action(s) leading to such liabilities occurred. The foregoing sentence shall survive Closing under this Agreement. Seller will assign any environmental indemnification agreements it obtained from the Seller's grantor to Buyer, if any, with the right of the Buyer to enforce the indemnification obligations contained in any such agreements to the extent permitted therein.

8. CONDITIONS TO BUYER'S OBLIGATIONS TO PERFORM. The Buyer's obligation to perform hereunder and to close on the purchase of the Property are conditional upon the following matters:

(a) Buyer's obligation is conditional upon the Buyer's Board of Trustees approval of the Buyer's acquisition of the Property and the obligations of the Buyer under this Agreement.

(b) Buyer's obligation is conditional upon Buyer's satisfaction with its inspection of the Property during the Inspection Period as more fully set forth in Section 7 of this Agreement.

9. SELLER'S CONTINUATION OF CONSTRUCTION ACTIVITIES PRIOR TO CLOSING. Seller is currently conducting demolition, environmental remediation and site work at the Property. Seller has provided Buyer with copies of all of the plans, specifications, contracts and scope of work being performed by Seller or its agents or contractors at the Property at the time of execution hereof. Seller shall continue to perform such work in accordance with such contracts. To the extent that any such plans, specifications or contracts are modified or supplemented following the execution of this Agreement (the "Construction Modifications"), or to the extent that any additional contracts are to be entered into by Seller prior to the closing (the "New Contracts"), Seller shall endeavor to provide Buyer with notice thereof as soon as practicable, and Buyer shall have the right to comment upon and participate in any discussions regarding the scope and timing of such work; provided, however, that the notice contemplated by this provision shall be deemed satisfied if an agent, employee, or representative of Buyer is present with Seller (whether in person, telephonically, or by email) in conversations, meetings and other communications involving such Construction Modifications or New Contracts. Moreover, notwithstanding the notice provisions set forth in Section 16(b) below, the notice contemplated by this Section 9 may also be made to

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other designated representatives of Buyer involved in the construction activities via telephone in addition to, or in lieu of, any of the other manners of providing notice outlined in Section 9.

10. POSSESSION OF THE PROPERTY. The Property shall be delivered to the Buyer at the time of the closing free and clear of all tenancies or occupancies by any person or entity, unless otherwise agreed herein. The Property shall also be reasonably free and clear of all trash and debris, and free and clear of any and all of Seller's personal property and equipment, except as set forth herein.

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

(a) Seller is duly organized and in good standing under the laws of the State of Maine, with full capacity, power and authority to enter into and fully perform the obligations and transactions contemplated by this Agreement;

(b) The execution and delivery of this Agreement and the performance by Seller of its obligations hereunder are within the lawful power of Seller, have been duly authorized and approved by all necessary actions on behalf of Seller, and will not conflict with, or result in a breach of any of the terms, covenants and provisions of: (i) Seller's Articles of Incorporation or By-Laws; (ii) any judgment, writ, injunction, regulation, ruling, directive or decree of any court of governmental authority; or (iii) any agreement or instrument to which Seller is a party or by which Seller is bound;

(c) The person executing this Agreement on behalf of Seller is duly authorized to do so and to bind Seller to enter into and fully perform the obligations and transactions contemplated by this Agreement;

(d) No consent, approval, order or authorization of any court or other governmental entity is required to be obtained by Seller in connection with the execution and delivery of this Agreement or the performance hereof by Seller;

(e) There are no litigation, liens, judgments, violations, or proceedings pending, or to the best of Seller's knowledge, threatened against or relating to the Property nor does Seller know or have reasonable grounds to know of any basis for any such action, or of any governmental investigation relating to the Property;

(f) There is no pending, or to the best of Seller's knowledge, threatened action or proceeding (including, but not limited to, any condemnation or eminent domain action or proceeding) before any court, governmental agency or arbitrator relating to or arising out of Seller's ownership of the Property or any portion thereof, or which may adversely affect Seller's ability to perform its obligations under this Agreement, or which may affect the Property or any portion thereof;

(g) Seller is not a "foreign person" within the meaning of § 1445 of the Internal Revenue Code;

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(h) To the best of Seller's knowledge, no work has been performed or is in progress at, and no materials have been furnished to the Property or any portion thereof which may give rise to mechanic's, materialmen's or other liens against the Property or any portion thereof except as may arise in connection with Seller's further obligations as specifically contemplated by this Agreement; and

(i) All outstanding bills and/or accounts payable concerning the Property are either paid or will be paid prior to or at the time of closing unless otherwise agreed by the parties in writing.

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

(a) Buyer is duly organized and in good standing under the laws of the Commonwealth of Massachusetts, with full capacity, power and authority to enter into and fully perform the obligations and transactions contemplated by this Agreement;

(b) The execution and delivery of this Agreement and the performance by Buyer of its obligations hereunder are within the lawful power of Buyer, have been duly authorized and approved by all necessary actions on behalf of Buyer, and will not conflict with, or result in a breach of any of the terms, covenants and provisions of: (i) Buyer's Articles of Incorporation or Bylaws; (ii) any judgment, writ, injunction, regulation, ruling, directive or decree of any court of governmental authority; or (iii) any agreement or instrument to which Buyer is a party or by which Buyer is bound;

(c) The person executing this Agreement on behalf of Seller is duly authorized to do so and to bind Seller to enter into and fully perform the obligations and transactions contemplated by this Agreement; and

(d) No consent, approval, order or authorization of any court or other governmental entity is required to be obtained by Buyer in connection with the execution and delivery of this Agreement or the performance hereof by Buyer.

13. DEFAULT AND REMEDIES. In the event that either Buyer or Seller defaults in the performance of its obligations hereunder, the non-defaulting party may elect to terminate this Agreement by written notice, or seek specific performance of the defaulting party's obligations.

14. BROKERAGE. The parties agree that no broker has been involved in this transaction.

15. ADJUSTMENTS, PRORATIONS AND CLOSING COSTS.

(a) Real estate taxes, assessments, rentals, common area maintenance charges, fuel oil, and utilities shall be prorated as of the date of closing based upon amounts thereof actually paid or received (as the case may be) as of this date.

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

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

(d) A portion of the purchase price shall be withheld at the closing by Buyer if required by 36 M.R.S.A. § 5250-A unless Seller furnishes to Buyer an affidavit stating, under penalty of perjury, that Seller is a resident of Maine or that the transfer is otherwise exempt from withholding tax.

16. MISCELLANEOUS.

(a) Time. Time is of the essence of this Agreement.

(b) Notices. Any notices required or permitted to be given under this Agreement shall be sufficient if in writing and if sent: (i) by first class mail, postage prepaid, registered or certified, return receipt requested; (ii) by hand delivery; (iii) by FedEx, or similar overnight express mail service, prepaid; or (iv) electronic mail ("e-mail") or by facsimile ("Fax") transmission, each to the addresses and/or Fax numbers listed below:

TO SELLER:
Charles E. Hewett
IDEALS
100 Commercial Street
Portland, ME 04101
chuck.hewett@ideals.org

WITH A COPY TO:
Helen S. Coburn, Esq.
Bernstein Shur
100 Middle Street, PO Box 9729
Portland, ME 04104-5029
hcoburn@bernsteinshur.com

TO BUYER:
Northeastern University
Planning, Real Estate and Facilities
360 Huntington Avenue, 216-201
Boston, MA 02115
Attention: Kathy Spiegelman
Email: k.spiegelman@northeastern.edu

WITH A COPY TO:
Northeastern University
Office of the General Counsel
360 Huntington Avenue, Suite 301

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Boston, MA 02115
Attention: Michael Glover
Email: m.glover@northeastern.edu

All such communication shall be deemed made upon the earlier of (3) business days following deposit with the U.S. Mail or the date of receipt as disclosed on the return receipt (if sent by registered or certified mail), or upon delivery (if hand delivered), or upon delivery as indicated on the proof of delivery (if sent via FedEx or similar overnight express mail service), or if sent via email with proof of receipt by the primary addressee, effective upon the day sent if received prior to 3:00 p.m. local time or the next business day if received thereafter. With respect to any of the above-referenced methods of delivery, rejection or other refusal to accept or the inability to deliver because of a change of address of which no notice was given shall be deemed to be receipt of the notice sent. Either party may change its address for purposes of this subparagraph by giving the other party notice of the new address in the manner described herein.

(c) Binding Effect/Assignment. This Agreement shall not become a binding contract until signed by both parties and that fact has been communicated to all parties or their agents. This Agreement will inure to the benefit of and bind the respective heirs, successors, personal representatives and assigns of the parties hereto and may be cancelled, modified or amended only by a writing executed by the parties hereto or their legal representatives.

(d) Construction. This Agreement and the Exhibits hereto set forth the entire agreement between the parties, and there are no other agreements or understandings between them related to the subject matter hereof. As used in this Agreement, the singular number shall include the plural, the plural the singular, and the use of one gender shall be deemed applicable to all genders. This Agreement shall be governed by and construed in accordance with the laws of Maine. All representations, warranties, covenants and indemnities made by either party herein shall survive the closing. If any provision of this Agreement is determined to be invalid or unenforceable, it shall not affect the validity or enforcement of the remaining provisions hereof. In the event of any dispute under this Agreement; prior to any litigation, the parties hereto shall first submit the matter to mediation and shall undertake good faith efforts to resolve any such dispute. In the event that a dispute hereunder is not resolved by mediation, the parties agree to submit any litigation to enforce this Agreement to the jurisdiction of the United States District Court for the District of Maine.

(e) Counterparts/Electronic Signatures. This Agreement may be simultaneously executed in any number of counterparts, each of which when so executed and delivered shall be an original, but such counterparts shall constitute one and the same instrument. This Agreement may be signed electronically and such shall be treated as original signatures.

(f) Attorney's Fees. If any legal action (including without limitation mediation and arbitration) is brought or compelled by either party to enforce any provisions of this Agreement, the prevailing party shall be entitled to recover from the other party its reasonable attorneys' and paralegals' fees and court costs, subject to and limited by the provisions of the Default and Remedies section of this Agreement.

DocuSign Envelope ID: 93BEB8D2-0DE3-4F1B-A064-562E6257362F

(g) Effective Date. The Effective Date of this Agreement shall be deemed to be the date first set forth above in this Agreement, provided that if no date is filled in, the Effective Date shall be the last date of the signature of either Buyer or Seller.

[*Signature Page Follows*]

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IN WITNESS WHEREOF, Seller and Buyer have executed this Agreement under seal as of the dates indicated above.

SELLER

THE INSTITUTE FOR DIGITAL ENGINEERING AND LIFE SCIENCES

DocuSigned by:
Charles E. Hewett
4BD10668DAF9434...

By: Charles E. Hewett
Its: Executive Director
Date: October 23, 2023

BUYER

NORTHEASTERN UNIVERSITY

DocuSigned by:
Thomas E. Nedell
FF602479C14A4DA...

By: Thomas E. Nedell
Its: Senior Vice President & Treasurer
Date: October 23, 2023

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EXHIBIT A
[*Legal Description*]

A certain parcel of land, together with the improvements thereon, located on the easterly sideline of Interstate 295 and the southerly sideline of Sherwood Street in the City of Portland, County of Cumberland and State of Maine being further described as follows:

Beginning at a 6-inch by 6-inch granite monument found inscribed “ECJ #356” marking the southerly sideline of Sherwood Street westerly sideline of the Canadian National Railroad and further described as the most northeasterly corner of described parcel;

THENCE, S 23-36-55 E, along said Railroad 316.33 feet to a 6-inch by 6-inch granite monument found inscribed "ECJ 356";

THENCE, S 23-36-55 E, along said Railroad, 526.90 feet, to a 4-inch by 4-inch granite monument with a drill hole;

THENCE, S 23-36-55 E, along said Railroad, 745 feet, more or less to the low water mark of the Casco Bay,

THENCE, in a general westerly direction along said low water line about 1,685 feet to a point on the easterly sideline of Interstate 295;

THENCE, N 2-23-50 W, along said sideline, 48 feet, more or less to a point;

THENCE, S 87-30-10 W, along said sideline, 30.00 feet to a point;

THENCE, N 2-23-50 W, along said sideline, 61.46 feet to a drill hole found, said drill hole lying on a tie course of S 73-07-39 W, 878.87 feet from the previous mentioned 4-inch by 4-inch granite monument with a drill hole;

THENCE, N 2-23-50 W, along said sideline, 237.87 feet to a 5/8 inch re-bar found capped "ECJ #509";

THENCE, N 89-44-34 E, along said sideline, 1.05 feet to a 5/8 inch re-bar found capped "ECJ #509";

THENCE, N 6-28-53 E, along said sideline, 122.88 feet to a 5/8 inch re-bar found capped "ECJ #509";

THENCE, N 0-24-30 E, along said sideline, 88.91 feet to a 4-inch by 4-inch granite monument found inscribed "ECJ #509";

THENCE, N 24-48-04 E, along said sideline, 60.29 feet to a 6-inch by 6-inch granite highway monument;

THENCE, N 31-29-16 W, along said sideline, 31.96 feet to a 4-inch by 4-inch granite monument inscribed "ECJ #509";

THENCE, N 3-26-49 W, along said sideline, 111.10 feet to a 5/8 inch re-bar found capped "ECJ #509";

THENCE, N 8-40-57 E, along said sideline, 89.05 feet to a 4-inch by 4-inch granite monument inscribed "ECJ #509";

THENCE, N 23-15-05 E, along said sideline, 66.28 feet to a 4-inch by 4-inch granite monument Inscribed "ECJ #509";

THENCE, N 34-47-28 E, along said sideline, 96.68 feet to a 4-inch by 4-inch granite monument inscribed "ECJ #509";

THENCE, N 25-25-29 E, along said sideline, 160.02 feet to a 5/8 inch re-bar found capped "ECJ #509";

THENCE, N 23-37-03 E, along said sideline, 63.03 feet to a 4-inch by 4-inch granite

DocuSign Envelope ID: 93BEB8D2-0DE3-4F1B-A064-562E6257362F

monument inscribed "ECJ #509";

THENCE, N 39-23-04 E, along said sideline, 6.72 feet to a 6-inch by 6-inch granite monument found inscribed "ECJ #509";

THENCE, N 55-32-30 W, along said sideline, 11.67 feet to a 4-inch by 4-inch granite monument inscribed "ECJ #509";

THENCE, N 34-47-50 E, along said sideline, 117.04 feet to a 4-inch by 4-inch granite monument inscribed "ECJ #509";

THENCE, N 34-43-38 E, along said sideline, 15.02 feet to a 5/8 inch re-bar found capped "ECJ #509" marking the southerly sideline of Sherwood Street;

THENCE, S 55-12-08 E, along said Sherwood Street, 288.60 feet to the point of beginning.

The foregoing description was prepared based on the Survey prepared by OEST Associates, Inc. dated February, 1999 and last revised February 26, 1999 recorded in in the Cumberland County Registry of Deeds in Plan Book 199, Page 159.

Alternate Legal Description [recent survey; grant to be without covenant of title]:

All right, title and interest in and to the following described lot or parcel of land, together with the buildings and improvements thereon, located in the City of Portland, County of Cumberland, State of Maine, which description is based on a ALTA/NSPS Land Title Survey prepared by VHB, dated June 30, 2021, last revised February 28, 2022, and Seller makes no representations or warranties as to the accuracy of said property description:

Beginning at a granite bound found at the intersection of the southerly sideline of Sherwood Street and the westerly sideline of land now or formerly of the state of Maine as described in the Cumberland County Registry of Deeds in Book 25500, Page 215, and Book 10924, Page 91 being formerly owned by the St. Lawrence & Atlantic Railroad Company, in part, and the Canadian National Railway Company, in part;

THENCE along the westerly sideline of land of the State of Maine South 23°38’41” East for a distance of 316.33 feet to a granite bound found;

THENCE continuing along land of the State of Maine South 23°34’45” East for a distance of 526.95 feet to a granite bound found;

THENCE continuing along the land of the State of Maine South 23°34’45” East for a distance of 745 feet, more or less to the low water mark of Casco Bay,

THENCE in a generally westerly direction along the low water line about 1,720 feet, more or less, to a point in the easterly sideline of Interstate 295;

THENCE along the easterly sideline of Interstate 295 the following courses and distances:

North 2°23’38” West for a distance of 48 feet, more or less to a point;

South 87°36’22” West for a distance of 30.00 feet to a point;

North 2°23’38 West for a distance of 61.46 feet to a point being located South 73°07’57” West at a distance of 878.66 feet from a granite bound found on the westerly sideline of land now or formerly of the State of Maine;

North 2°23’38 West for a distance of 237.87 feet to a point;

North 89°44’46” East for a distance of 1.05 feet to a rebar found;

North 6°29’05” East for a distance of 122.88 feet to a point;

North 0°24’42: East for a distance of 88.91 feet to a granite bound found;

DocuSign Envelope ID: 93BEB8D2-0DE3-4F1B-A064-562E6257362F

North 24°48’16 East for a distance of 60.29 feet to a granite bound found;
North 31°29’04” West for a distance of 31.96 feet to a point;
North 3°26’37” West for a distance of 111.10 feet to a point;
North 8°41’09” East for a distance of 89.05 feet to a point;
North 23°15’17” East for a distance of 66.28 feet to point;
North 34°47’40” East for a distance of 96.68 feet to a granite bound found;
North 25°25’41” East for a distance of 160.02 feet to a point;
North 23°37’15” East for a distance of 63.03 feet to a point;
North 39°23’16” East for a distance of 6.72 feet to a point;
North 55°32’18” West for a distance of 11.67 feet to a point;
North 34°48’02” East for a distance of 117.04 feet to a granite bound found;
North 34°43’50” East for a distance of 15.02 feet to a rebar found at the southerly sideline of Sherwood Street;

THENCE departing from the easterly sideline of Interstate 295 and running along the southerly sideline of Sherwood Street South 55°12’19” East for a distance of 288.59 feet to the point of beginning.

Meaning and intending to convey the same premises described in a Quitclaim Deed with Covenant from B&G Foods North America, Inc. to The Initiative for Digital Engineering and Life Sciences dated March 23, 2022 and recorded in the Cumberland County Registry of Deeds in Book 39282, Page 151.

The above described property shall be conveyed subject to the encumbrances listed as items 1-14 on Exhibit A of the Quitclaim Deed with Covenant from The Pillsbury Company to Heritage Acquisition Corp. dated March 15, 1999 and recorded in the Cumberland County Registry of Deeds in Book 14616, at Page 50 and the rights and easements granted by Heritage Acquisition Corp. to Central Maine Power Company and Verizon New England, Inc. by instrument dated February 7, 2006 and recorded in the Cumberland County Registry of Deeds in Book 24049, Page 189.

DocuSign Envelope ID: 93BEB8D2-0DE3-4F1B-A064-562E6257362F

EXHIBIT B
[*Development Contracts*]

1. Design Agreement by and between Bruner/Cott and The Initial for Digital Engineering and Life Sciences ("IDEALS") (*in negotiation; near final form*)

2. Design Agreement by and between CambridgeSeven and IDEALS (*in negotiation; near final form)*

3. Construction Management Agreement, by and between IDEALS and Consigli Construction Co., Inc. dated January 17, 2023

4. Cooperative Agreement by and between the Maine DOT ("MDOT") and IDEALS, dated as of January 18, 2023

5. MDOT Temporary Access Road Rights Agreement by and between MDOT and IDEALS, dated as of March 30, 2023

6. License Agreement with the City of Portland Fire Department by and between the City of Portland and IDEALS dated May 24, 2023

7. License Agreement with the City of Portland Fire Department by and between the City of Portland and IDEALS dated August 2, 2022

8. IDEALS Boiler Purchase Agreement by and between IDEALS and Maine Plywood USA, LLC dated June 19, 2023

9. Consultant Services Agreement, by and between IDEALS and MacRostie Historic Advisors

10. Consultant Services Agreement, by and between IDEALS and Thorton Tomasetti

11. Consultant Services Agreement, by and between IDEALS and Tsoi Kobus Design

12. Consultant Services Agreement by and between IDEALS and Vanasse Hangen Brustlin

13. Consultant Services Agreement, by and between IDEALS and Woodard & Curran

14. Consultant Services Agreement, by and between IDEALS and Power Engineers

15. Consultant Services Agreement, by and between IDEALS and SW Cole Engineering

16. Consultant Services Agreement, by and between IDEALS and Stephen Stimson Associates

5

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. Private on-site roadways will connect from the end of Sherwood Street to the proposed garage and drop-off areas. No additional public or private rights of way are proposed.

6

Section 6: Schedule

6.A Schedule

The opening year for the Roux Institute is anticipated to be 2027. The proposed uses are anticipated to be fully occupied in 2032.



The Roux Institute at Northeastern University

Transportation Demand Management Plan

PREPARED FOR

Roux Institute at Northeastern University / IDEALS
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NOVEMBER 2023

Table of Contents

1 Introduction 1

1.1 Program Summary and Project Status 1
1.1.1 Existing Conditions 2
1.1.2 Proposed Development Program 2

2 Mobility Context 4

2.1 Vehicular Access and Circulation 6
2.2 Walking and the Pedestrian Environment 6
2.2.1 Existing Conditions 6
2.2.2 Future Commitment 6
2.2.3 Potential Future MaineDOT Infrastructure 6
2.3 Bicycling Environment and Facilities 7
2.3.1 Existing Conditions 7
2.3.2 Future Commitment 8
2.3.3 Potential Future MaineDOT Infrastructure 8
2.3.4 Other Potential Future Infrastructure 8
2.4 Public Transit 10
2.4.1 Existing Conditions 10
2.4.2 Future Opportunities 11
2.5 Ride-Hailing 12
2.6 Current Parking Policies 12
2.7 Existing TDM Efforts 12

3 TDM Coordinator 14

4 Baseline TDM Data 16

4.1 Modal Split 16
4.1.1 Roux Institute at Northeastern University Transportation Survey 16
4.1.2 Traffic Movement Permit Mode Split Data 17
4.2 Trip Generation 17
4.3 Proposed Parking Supply/Demand 18

5 TDM Mode Split Targets 19

6 Mode Split Target Strategies 20

7 Monitoring and Reporting Plan 23

List of Tables

Table No.	Description	Page
Table 1	Development Program	2
Table 2	Transportation Survey Mode Split Data	17
Table 3	TMP Mode Split	17
Table 4	Trip Generation	18
Table 5	Drive Mode Split Targets	19
Table 6	TDM Strategies - Commitments	21

List of Figures

Figure No.	Description	Page
Figure 1	Proposed Site Plan	3
Figure 2	Campus Transportation Access	5
Figure 3	15 Minute Bike Shed Zone	7
Figure 4	Existing and Potential Future Bicycle Facilities	9
Figure 5	Public Transit Access	11

1

Introduction

Pursuant to Section 17.3 of the City of Portland Technical Manual, the Roux Institute at Northeastern University's Transportation Demand Management Plan (TDM) provides a cohesive approach to establish a targeted set of strategies aimed at reducing single occupancy vehicle trips to and from the proposed campus in Portland, Maine. The TDM plan describes how the Roux Institute at Northeastern University will provide information and education, enhance alternative transportation infrastrucutre and mobility, and incentivize students, faculty, and staff so that they use more sustainable, multimodal commuting options such as walking, bicycling, transit, carpooling and telecommuting. The Roux Institute at Northeastern University is committed to ongoing annual surveying to monitor the implementation and succcess of the TDM plan.

1.1 Program Summary and Project Status

In 2020, the Roux Institute at Northeastern University was launched to build expertise at the intersection of humans and technology. The campus is currently temporarily operating at 100 Fore Street but will be relocating to the redeveloped B&M Baked Beans facility. In its permanent waterfront location in East Deering, the Roux Institute at Northeastern University will continue to provide educational, research, and collaborative programs in areas including artificial intelligence, computer and data sciences, digital engineering, advanced life sciences, and medicine. The Roux Institute at Northeastern University offers post-graduate degrees and certifications, conducts research, assists start-ups, and partners with private, public and non-profit organizations. The mission of the Roux Institute at Northeastern University is *a vision to enable the creation of a synergistic technology and life science-driven economy and workforce, the Roux Institute at Northeastern University designs, curates, and integrates learning, research, and entrepreneurial solutions in collaboration with industry, academic institutions, and community organizations to catalyze talent development and economic impact throughout Maine*.

In February 2023, the Portland City Council approved the Institutional Overlay Zone for the campus at the old B&M Baked Beans site. The project team is currently embarking on the site plan review and public input process with the City of Portland, which includes the preparation and submission of a MaineDOT Traffic Movement Permit application. Permits are expected by the summer of 2024, when construction will begin, with an opening date in 2027. The campus will continue to grow over time in subsequent years and phases.

1.1.1 Existing Conditions

The Roux Institute at Northeastern University currently leases 84,000 sf of institutional space at 100 Fore Street adjacent to the East End neighborhood and near the waterfront in downtown Portland. In the fall of 2023, there were 665 enrolled students and 175 staff, researchers and faculty. There are currently 16 graduate programs in computer and data science, analytics, cloud software, cybersecurity, life sciences, and project management. To realize its full potential, the Roux Institute at Northeastern University is seeking to relocate its campus and expand in size as described in the following section.

1.1.2 Proposed Development Program

The campus will be anchored by a 238,000 square foot Learning, Research and Collaboration building and the 58,000 square foot Bean Building housing a start-up incubator program. By 2032, the campus plans to accommodate 3,123 graduate students in addition to supporting uses as shown in Table 1. An 8,000 square foot café and a day care center providing care for 50 children will be located on-site primarily for the families of students, staff, and faculty. In addition to its academic offerings, the campus will benefit the community by contributing to local economic growth and providing open space along the waterfront, active transportation accommodations throughout the site, job creation, and innovation space. The site plan is shown in Figure 1.

Table 1 Development Program

Program Component		2027 (Opening)	2032
Day care center		50 Children	50 Children
Academic Café		8,000 sf	8,000 sf
Roux Institute at Northeastern University	Graduate students	1,899 students	3,123 students
	Faculty, Staff, and Researchers[1]	225 staff	300 staff
	Embedded startup[1]	60 staff	100 staff
	JAX and Other Signature Partners[1]	55 staff	64 staff
	Affiliated Users[2]	35 visitors	100 visitors
	Special Events (daily)	150 attendees	150 attendees

1 All staff counts are in full-time equivalents.
2 Affiliated Users is a broad category for occasional visitors such as corporate learners, investors, donors, mentors, and neighbors.

The garage has been designed to accommodate 708 parking spaces. For this phase, 16 of those parking spaces will be used to accommodate parking for 66 bicycles and the remaining 692 parking spaces will be used to accommodate vehicular parking. In addition to the garage spaces, there will be 14 parking spaces provided at grade on the site. All on-site parking will be paid parking, and a parking office will be created to manage permitting and enforcement for the

campus. Parking costs and regulations may vary between categories of users (students, staff, faculty, visitors, etc.). Parking will be shared between uses within the campus only. This development will not rely on any on-street parking. The campus may include on-site car sharing, enabling travel to and from the site using other modes, with the comfort that vehicles are available if necessary. The TDM measures presented in this plan will be critical to maintaining the expected parking demand.

Figure 1 Proposed Site Plan



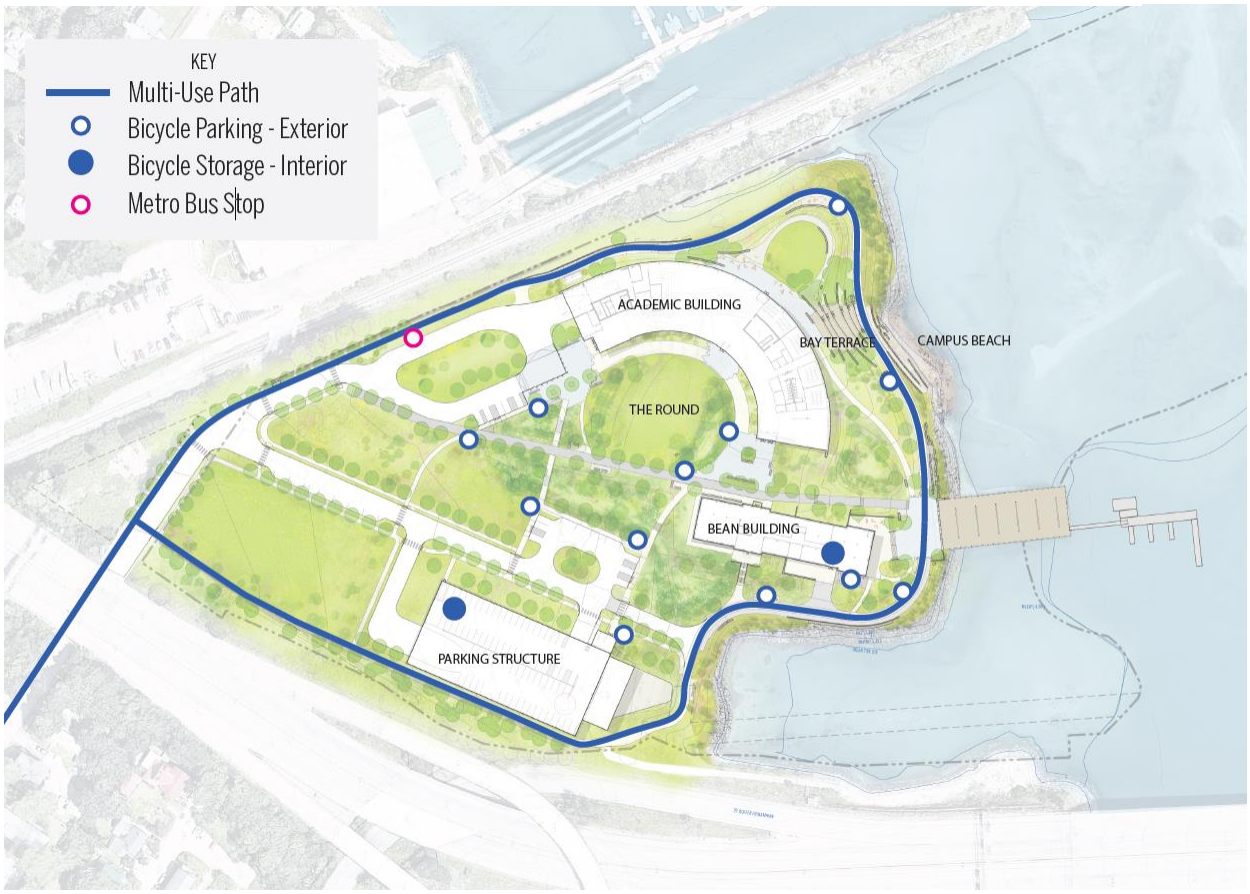
2

Mobility Context

For a TDM plan to be successful in shifting drive alone vehicle trips to transit, carpool, walk, and bicycle trips, it is essential to understand the multimodal transportation system surrounding the site. This section describes the existing transportation network challenges and future opportunities the Roux Institute at Northeastern University faces in redeveloping the site for their permanent campus.

The proposed waterfront site is located in East Deering adjacent to a marina and residential neighborhood comprising of single and multifamily homes as well as a commercial area which includes restaurants, bars, auto mechanics, and offices. I-295 runs along the western edge of the site, however the site will be well connected to the East Deering neighborhood, Back Cove, and the Portland Peninsula on the eastern promenade via vehicle, pedestrian, bicycle, transit and potential water taxi facilities. As shown in Figure 2, there are several promising opportunities to enhance and expand these transportation systems as part of the project to improve transportation mobility in and around the campus.

Figure 2 Campus Transportation Access



2.1 Vehicular Access and Circulation

A single vehicular access point to the site is provided via Sherwood Street at the intersection with Veranda Street through a 40-foot-wide highway underpass. Sherwood Street will continue to serve as vehicular access into and out of the campus in the future. The site is in close proximity to I-295, Route 1, Washington Avenue, and Baxter Boulevard. The traffic signal system along Washington Avenue is a traffic responsive system operating with high efficiency. Intersections of Washington Avenue at Veranda Street, at Presumpscot Street, and at Ocean Avenue are each signalized intersections.

2.2 Walking and the Pedestrian Environment

2.2.1 Existing Conditions

The surrounding East Deering neighborhood provides pedestrian amenities including sidewalks along Washington Avenue and Veranda Street. A sidewalk runs along the west side of Bates Street but narrows and is periodically blocked by utility poles. There is no sidewalk present on the east side of Bates Street. The Back Cove trail (multi-use path) runs along the Back Cove and Tukey's Bridge near the site. The main roadway access to the site is via Sherwood Street which consists of a 30-foot-wide roadway in a 40-foot wide right of way and includes non-continuous sidewalk segments mostly on the north side. The pedestrian connectivity to the Portland Peninsula is accessible from the Back Cove Trail across the west side of Tukey's Bridge. The sidewalk connecting from the intersection of Washington Avenue/Veranda Street is narrow and adjacent to vehicular traffic on the ramp to I-295. The sidewalk merges with the Back Cove Trail which adds bicycle and pedestrian demand to a narrow, shared use path over Tukey's Bridge. There is no existing direct connection to this shared use path from the campus.

2.2.2 Future Commitment

The Roux Institute at Northeastern University will improve pedestrian safety and connectivity to the East Deering neighborhood from the campus by providing continuous sidewalks on both sides of Sherwood Street. A crosswalk will be implemented across Sherwood Street at Veranda Street. Once on the site, pedestrian facilities will connect site uses and points along the waterfront. Improvements to pedestrian connections will increase walkability for the site.

2.2.3 Potential Future MaineDOT Infrastructure

The infrastructure described above will be constructed to allow for future connections to potential MaineDOT infrastructure. MaineDOT is contemplating a 14-16-foot-wide shared use path on a new bridge parallel to Tukey's Bridge on the east side that would provide a direct connection from the campus to the Portland Peninsula. In addition, a 10-foot-wide shared use path under Tukey's Bridge would improve pedestrian access to and from the campus to the Back Cove trail and for pedestrians traveling between East Deering and the Portland Peninsula using the future shared use path bridge. These new shared use paths would provide wider, safer, and more comfortable accommodations for pedestrians and improve connectivity.

2.3 Bicycling Environment and Facilities

2.3.1 Existing Conditions

Bicycle facilities are present in the East Deering neighborhood on Washington Avenue including buffered bike lanes north of Presumpscot Street and faded sharrows along Veranda Street. Bates Street provides a bike lane from Washington Avenue to Baxter Boulevard. The Back Cove trail (multi use path) runs along the Back Cove and Tukey's Bridge near the site. There are currently no bicycle facilities on Sherwood Street. Similar to the discussion above describing the pedestrian access across the shared use path on Tukey's Bridge, bicyclists must also use the narrow path to connect to the Portland Peninsula. Although this shared use path provides access to the Back Cove trail, it does not provide direct access to the campus. There are 8 public U-racks totaling 16 bicycle parking spaces located within the 970 Baxter Boulevard parking lot.

Walkscore.com rates East Deering with a Bikescore of 58/"Bikeable" indicating some bike infrastructure is present. The 15-minute bike shed zone from the campus is illustrated in Figure 3.

Figure 3 15 Minute Bike Shed Zone



2.3.2 Future Commitment

The Roux Institute at Northeastern University is dedicated to creating a safer, complete street along Sherwood Street to accommodate bicyclists into and out of the site by providing bicycle lanes. The campus will provide 166 bicycle parking spaces for students, staff, faculty and visitors. This quantity is more than triple the required amount of bicycle parking per the Portland Technical Manual. Shower and locker facilities will be provided for those commuters who bicycle to campus. The Roux Institute at Northeastern University will explore providing a Bike Fix-it Station for bike commuters and other visitors to the site.

2.3.3 Potential Future MaineDOT Infrastructure

The infrastructure described above will be constructed to allow for future constructed connections to potential MaineDOT infrastructure. MaineDOT is contemplating a 14-16 foot wide shared use path on a new bridge parallel to Tukey's Bridge on the east side that would provide a direct connection from the campus to the Portland Peninsula. In addition, a 10-foot-wide shared use path under Tukey's Bridge would improve bicycle access from the campus to the Back Cove trail and bicycle connectivity between East Deering and greater Portland.

2.3.4 Other Potential Future Infrastructure

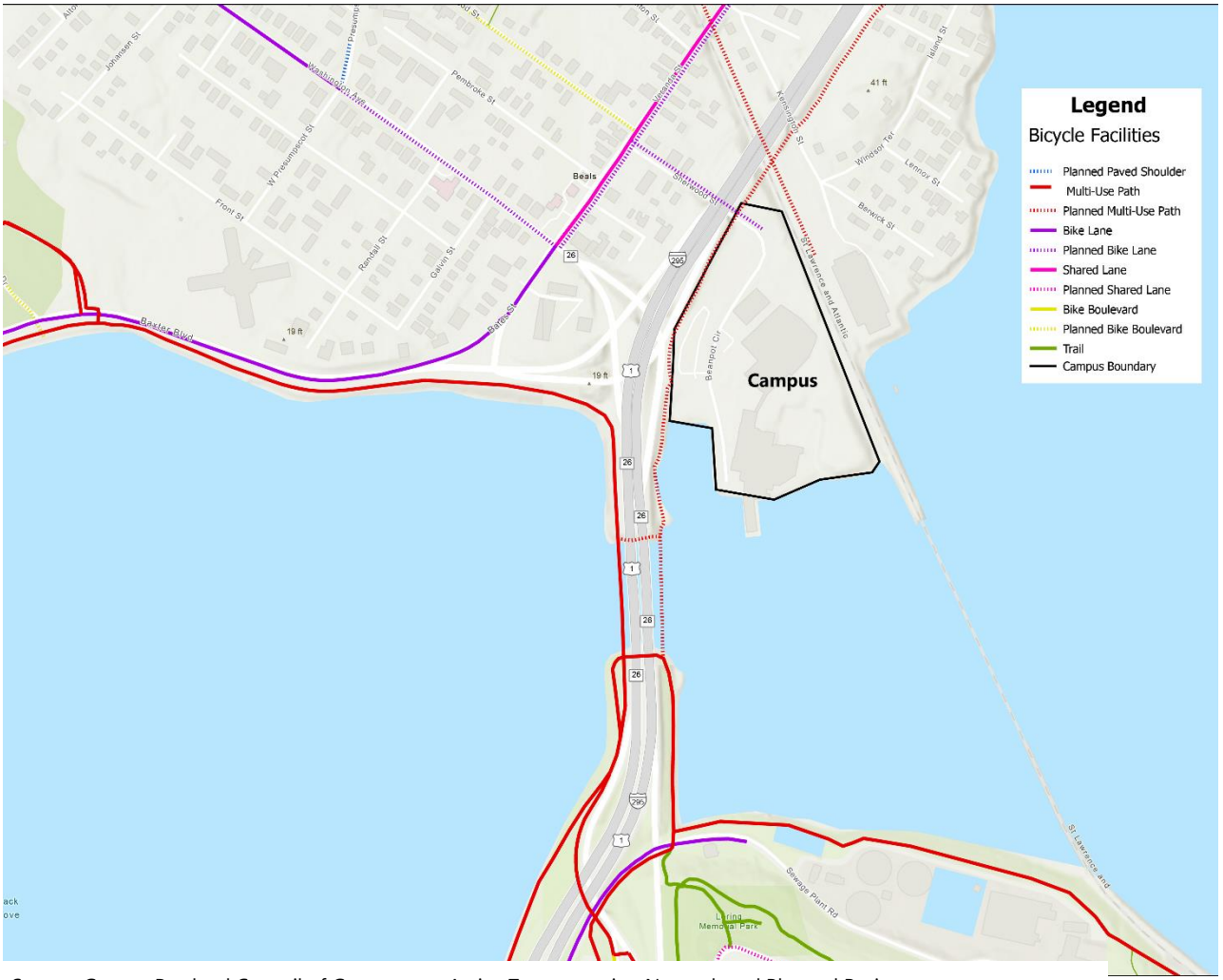
The City of Portland is currently working on the *Baxter Boulevard | Bates Street | Veranda Street Bikeway Project*[1] to implement buffered bicycle lanes on Veranda Street and a two-way bi-directional separated bike lane on Bates Street. Other potential opportunities for multi-use paths in the area include the Berlin Subdivision railroad right-of-way to points north ending at the Yarmouth Park and Ride on Exit 15 of I-295. Additionally, the Martin's Point Shared Use Path study considered a shared use path from Sherwood Street to the recently installed shared use path west of the Martin's Point Bridge starting at Wordsworth Street.

The City of Portland and Tandem Mobility have partnered to provide a bike share system in Portland. There are over 200 bicycles at over 40 stations predominately throughout the Portland peninsula. Pedal bikes and electric bikes are available by the minute and memberships are available on a monthly or yearly basis. There are currently no Portland BIKESHARE locations within the East Deering neighborhood in close proximity to the site, however there are a few on the East End across Tukey's Bridge. There is an opportunity to explore providing a new station on the campus which would expand the BIKESHARE network to the East Deering neighborhood.

Figure 4 presents the existing and potential future bicycle facilities surrounding the campus.

[1] Baxter Boulevard| Bates Street| Veranda Street Bikeway Project https://portland.civilspace.io/en/projects/better-bikeways-initiative

Figure 4 Existing and Potential Future Bicycle Facilities



Source: Greater Portland Council of Government Active Transportation Network and Planned Projects
https://gpcog.maps.arcgis.com/apps/View/index.html?appid=d5d7dbbc69534242b5fd4092c78f26e4

2.4 Public Transit

2.4.1 Existing Conditions

As shown in Figure 5, two bus lines currently stop near the campus: Metro Route 7 and Metro Routes 9A / 9B. Route 7 provides service between Portland and Falmouth with a stop at the Metro Pulse on the Peninsula as well as a stop near the campus at Veranda Street/Sherwood Street approximately a quarter of a mile from the center of the campus. Routes 9A/9B provide circular bus service between downtown Portland and North Deering with service running along Washington Avenue and Congress Street. Route 9A/9B stops on Washington Avenue near the site at Galvin Street and Veranda Street respectively which is under a half mile from the site. Bus transfers can be made at the Pulse and other stops on the Peninsula to reach the rest of Portland and several outlying towns.

Buses run continuously throughout the day, readily accommodating the varied schedules of students and other campus users. Metro BREEZ express bus service to Yarmouth, Freeport, and Brunswick and the Husky Line to Westbrook and Gorham establish a regional footprint for transit service. Ten local and express routes connect the campus to most of the Portland area with no more than one transfer.

The monthly ridership on Metro Route 7 is one of the lowest in the Metro system. In 2021, on an average weekday, there were 2521 boardings on Route 7. Each bus has the capacity of approximately 30 people and the bus runs 13 times per weekday inbound and outbound or a monthly capacity of approximately 7800 boardings, which leaves plenty of capacity on Route 7 to accommodate site related traffic.

In addition to the local Metro system, the Portland Transportation Center (PTC) in Thompson's Point provides regional bus and train service. Concord Coach Lines runs bus service from Portland to Boston, Massachusetts, Logan International Airport, and New York City as well as points north of Portland. The Amtrak Downeaster provides train service between Brunswick and Boston with a stop in Portland. Greyhound provides bus service between East Bayside in Portland and Boston, Massachusetts.

Figure 5 Public Transit Access



2.4.2 Future Opportunities

Metro is contemplating improvements to the transit system throughout Portland. In addition, the Roux Institute at Northeastern University is working with Metro to consider site specific transit accommodation for an on-campus bus stop that would connect the Roux Institute at Northeastern University to other key locations across the City, including housing, additional transportation connections, and partner organizations. The Roux Institute at Northeastern is also working with Metro and MaineDOT to identify park and ride locations where Roux students, faculty and staff can park and use Metro to travel to the site.

2.4.2.1 Transit Together Plan

In January 2023, The Portland Area Comprehensive Transportation System (PACTS) Policy Board approved the Transit Together Plan[2]. As of August 27, 2023, this plan enabled changes to Route 9 to provide more consistent 30-minute headways from 6am to 6pm on weekdays and from about 8am to 6pm on Saturdays. Route 9B will run one hour later in the evening.

In the Spring of 2024, Metro plans to make improvements to Route 7 by extending the route to the Portland Jetport via Congress Street with improved frequency and hours of operation.

[2] Transit Together - https://gpmetro.org/1644/Transit-Together---Route-and-Schedule-Ch

Frequency for Route 7 will improve from 60 to 30 minutes Monday through Saturday and services will be provided until 10pm or 11pm. The Falmouth loops will be eliminated, and Route 7 will use the Shaw's parking lot in Falmouth to turnaround. In conjunction, Route 5 service to the Jetport and Hutchins Drive will be discontinued to improve travel time between Portland and the Maine Mall. In addition, microtransit service will be implemented in east Falmouth. Microtransit riders within the zone will be able to request a ride using a smartphone app or phone call. These changes significantly increase the frequency and daily service to the campus.

2.4.2.2 Other Metro Opportunities

Metro is in the preliminary planning stages of studying how to extend Route 7 service along US Route 1 to Yarmouth. This extension could provide a bus route for campus commuters, with parking at the MaineDOT Exit 15 Park and Ride in Yarmouth.

The Roux Institute at Northeastern University is working with Metro to improve the quality and frequency of transit connections to the campus. Reduction of headways, modification of Route 5 or Route 7 to make a stop at the campus, and construction of a transit stop and turnaround on the campus, are all under consideration to further the convenience of transit for commuting to and from campus. The Roux Institute at Northeastern University will promote and incentivize transit use by subsidizing transit passes for students, staff, and faculty.

2.5 Ride-Hailing

In addition to driving, transit, walking, bicycling, and carpooling, commuters have the option of using ride hailing services such as Uber, Lyft and/or traditional taxis. Although these services result in vehicle trips to and from the campus, they reduce the parking demand and allow for less vehicle ownership and more flexibility with commute mode choices.

2.6 Current Parking Policies

Parking is currently provided to staff, faculty and embedded partners at $50 per month, per spot. There are 176 parking spaces allocated for the Roux Institute at Northeastern University in the on-site garage. Embedded partners and employees who opt out of monthly parking pay $1/hour to park in the garage. Parking for visitors is also provided via a public rate of $5/hour and in adjacent, paid parking lots. Students of the Roux Institute at Northeastern University are not currently charged to park on-site but will be at the future campus.

2.7 Existing TDM Efforts

As part of this TDM plan, the Roux Institute at Northeastern University plans to bolster its current TDM efforts for the permanent campus proposed in East Deering. However, they are currently implementing TDM strategies on the existing campus at 100 Fore Street to help reduce drive alone trips:

- Appointed a transportation coordinator who surveys students, faculty and staff to develop an understanding about mode choice.

- Subsidizing transit passes for faculty, staff and students. Posting transit related information in highly visible areas on site. Providing information on transportation commuting options including transit on the Roux Institute at Northeastern University's website.
- Offering convenient, hybrid course formats that blend online and on-site learning thus reducing the demand for commuting.
- Charging staff, faculty and embedded partners $50 per month per parking space.

3

TDM Coordinator

The Roux Institute at Northeastern University will designate a TDM coordinator to oversee the administration of the TDM plan and the annual surveying and reporting process.

The Roux Institute at Northeastern University plans to follow industry best practice by appointing a campus-wide transportation coordinator. The TDM Coordinator will collect data on the TDM progress to ensure it evolves as the site develops. Once the site is operational, the TDM Coordinator will conduct a transportation survey for students, staff, and faculty to establish a baseline for future drive alone mode share reduction goals. They will also collect and disseminate information (including non-automobile travel options) on-site and organize outreach events and campaigns to encourage TDM participation. The TDM Coordinator will promote alternative transportation choices to educate those commuting to and from the campus and coordinate the implementation of TDM strategies to reduce single occupancy vehicle (SOV) trips. In addition, the TDM Coordinator will work with the City of Portland, Metro, GoMaine, car share, and bike share programs to improve non-SOV mode shares. The responsibilities of the TDM Coordinator include the following:

- Promote alternative transportation choices to students, staff, faculty, and visitors to reduce single occupant vehicles (SOV) trips.
- Coordinate the implementation of TDM strategies with students, staff, and faculty and conduct orientations to educate those commuting to and from the campus regarding their transportation options.
- Monitor bike rack usage and make recommendations as needed to accommodate potential growing demand.
- Coordinate with the City of Portland, Metro, GoMaine, car share and bike share, and other potential partners to improve access to non-SOV modes.
- Conduct annual Transportation Monitoring and activities necessary to measure the effectiveness of the TDM program in achieving the mode share reduction target.
- Administer and review TDM surveys on a yearly basis.

- Complete the standard City of Portland TDM Reporting Form, which will summarize how effective the various strategies have been, mode share data based on the surveys and program success and barriers.
- File annual TDM reports by May 15th of each year with the City of Portland.

The TDM Coordinator will be the primary point of contact for students, staff, and faculty regarding the TDM plan. The TDM Coordinator will develop strategies and incentives for students, staff, faculty, and visitors where applicable. The TDM Coordinator will also collaborate with commuters prior to when they start to inform them of the robust network of alternative mode choices available to them.

4

Baseline TDM Data

Baseline travel demand and supply data for the campus has been quantified for the Traffic Movement Permit (TMP) Application being submitted to MaineDOT as part of the site plan review process. Baseline data includes estimated mode split, future trip generation estimates, and proposed parking supply and future demand estimates. Reviewing survey data and how the existing students, faculty and staff are currently commuting to campus, and how they expect to commute to the proposed campus, provides insight to which alternative modes may have the greatest potential to reduce drive alone trips.

4.1 Modal Split

4.1.1 Roux Institute at Northeastern University Transportation Survey

The Roux Institute at Northeastern University conducted transportation surveys on a quarterly basis throughout 2022 and 2023 which collected responses from students, staff, and faculty at the existing 100 Fore Street campus. The survey asked how the respondents commuted to campus and then how they imagine they will commute to the new campus in East Deering. The results of the survey mode share data are presented in Table 2. It is important to note that the data collected slightly varied throughout the time of year. Additionally, the Roux Institute at Northeastern University is an evolving, growing Institute currently in a temporary location and this data is only representative of a portion of students, staff and faculty. Based on feedback collected from the survey, it is anticipated that transit and bicycle trips will increase, walk trips will decrease, and drive trips will slightly decrease due to the proposed campus location and existing transportation system in East Deering. The Roux Institute at Northeastern University will continue to survey on a quarterly basis and make adjustments as circumstances evolve.

Table 2 Transportation Survey Mode Split Data

	Existing Commute at 100 Fore Street		
	August 2022	April 2022	January 2023
Drive	77%	72%	73%
Transit	4%	3%	4%
Walk	13%	16%	19%
Bike	6%	7%	4%
Other	0%	2%	0%

4.1.2 Traffic Movement Permit Mode Split Data

In addition to the data collected as part of the transportation surveys, expected mode share splits assumed in the Traffic Movement Permit (TMP) by land use are also provided in Table 3. The TMP mode splits are slightly more conservative in terms of analyzing vehicular traffic impact on the study area intersections. As additional bicycle and pedestrian connections are constructed in future years, it is likely that those mode shares will increase.

Table 3 TMP Mode Split

Population	Drive	Transit	Walk/Bike
Students	80%	10%	10%
All Other Populations	90%	5%	5%

Source: TMP indicates mode share assumptions presented in the Traffic Movement Permit

4.2 Trip Generation

As part of the TMP application, a trip generation analysis was conducted based on the 2032 development program presented in Table 1 using Institute of Transportation Engineers (ITE) publication, Trip Generation 11th edition as well as a custom trip generation methodology for the academic use of the site. The following assumptions were made to estimate student trip generation based on data from the campus:

- 43% of student enrollment are present on campus each day.
- 40% are daytime students and 60% are evening students.

Mode shares that were previously presented in Table 3, and applicable on site, internal capture trip rates were applied to the trip generation estimate to determine the external vehicle, pedestrian and walk trips as well as transit trips. The resulting estimated trip generation for the campus is presented in Table 4. The campus is expected to generate 237 morning and 521 evening peak hour vehicle trips, 20 morning and 51 evening peak hour transit trips, and 20 morning and 51 evening peak hour pedestrian and bicycle trips.

Table 4 Trip Generation

	Vehicle Trips	Transit Trips	Ped/Bike Trips
AM Peak Hour			
In	227	20	20
Out	10	0	0
Total	237	20	20
PM Peak Hour			
In	276	30	30
Out	245	21	21
Total	521	51	51

Source: Trip Generation Analysis presented in the Traffic Movement Permit

4.3 Proposed Parking Supply/Demand

A parking analysis was performed to estimate parking demand for the Roux Institute at Northeastern University. It was determined that parking demand peaks during the overlap between day and night users. Based on travel patterns of existing daytime and night students, the future enrollment will result in a peak demand of 561 spaces in the opening year and if the auto mode share stays as high as outlined in the TMP, 881 spaces in 2032.

The Roux Institute at Northeastern University is planning on providing parking on campus in a proposed parking garage designed to accommodate 708 parking spaces. For the first phase 16 of those parking spaces will be used to accommodate parking for 66 bicycles and the remaining 692 parking spaces will be used to accommodate vehicular parking. In addition to the garage spaces, there will be 14 parking spaces provided at grade on site. Since it is not feasible to construct parking garage levels during different phases of development, the parking garage will be constructed in 2027 to accommodate future demand. However, each interim phase will use only the number of parking spaces allocated based on that phase program.

In order to help mitigate the amount of vehicular traffic traveling to the campus, The Roux Institute at Northeastern University is actively exploring opportunities for satellite parking spots at existing park and ride locations within a short commute to the campus via tying into nearby transit routes or a Northeastern University-owned shuttle service.

To ensure parking usage in the structured garage does not exceed the permitted supply for each phase of development, the Roux Institute at Northeastern University will collect annual parking data to determine the number of vehicles parked throughout the day and evening. The TDM coordinator will obtain gate data for in, out, and occupancy counts on an hourly basis during the spring to coincide with the annual survey week. Moving into the future, the TDM coordinator will be working to reduce the automobile mode share to the site so that the garage is able to accommodate campus growth with that parking supply.

5

TDM Mode Split Targets

The TDM plan establishes short-term (3-5 year) and long-term modal split targets.

The TDM mode split target includes goals for reducing vehicle trips and increasing multimodal trips. Based on the future transportation system the campus will be supported by and TDM measures that will be implemented, the short and long-term targets that are proposed as part of this TDM plan are presented in Table 5. The mode share goals are within range of the City's *One Climate Future* document that sets a Key Transportation Milestone that by 2035, 26% of trips in the city will use alternative transportation modes, (up from 12%)[3]. The long-term goals are based on mode splits presented as part of the approved Institutional Development Plan for the Roux Institute at Northeastern University. The Roux Institute at Northeastern University is committed to implementing the TDM strategies presented in the following Section 6 to work towards achieving these mode split targets. The targets will be reviewed and updated based upon the annual TDM reporting process.

Table 5 Drive Mode Split Targets

Population	Mode Split Targets	
	Short-term (3-5 Years)	Long-term
Students	80%	70%
All Other Populations	90%	80%

[3] https://www.oneclimatefuture.org/wp-content/uploads/2021/02/OneClimateFuture_FinalJan2021_Downsized.pdf

6

Mode Split Target Strategies

The TDM plan includes a set of strategies aimed at achieving the TDM goals described above. The strategies are targeted to students, staff, and faculty traveling to and from the campus in East Deering. The Roux Institute at Northeastern University is committed to enhancing the multimodal transportation systems around the campus including providing improved pedestrian and bicycle facilities and transit access/service.

As part of the quarterly transportation survey, the Roux Institute at Northeastern University gathered data on which TDM strategies would more likely encourage students, staff, and faculty to commute differently to the proposed campus. The feedback indicates that Roux Institute at Northeastern University commuters are most likely to shift to a different mode share when showers, lockers and bike storage is available, there is a credit system for sustainable commuting, a bus route is provided from downtown, a park and go is available and bike share is available for commuters. Additional open-ended comments were provided and are also reflected in the TDM strategies presented in this section.

Table 6 below presents the strategies that the Roux Institute at Northeastern University is committed to fulfilling which are grouped into three main categories: Infrastructure/Transit/Mobility Improvements and Contributions; Incentives; and Information/Education/Marketing. These commitments include timelines for implementation. Table 7 provides a list of potential strategies the Roux Institute at Northeastern University is considering implementing in a future phase of the project.

Table 6 TDM Strategies – Commitments			Timeline Years	
Category	**Strategy**	**Targeted User/Group**	**Short-term (0-2 Years)**	**Long-Term (2+ Years)**
Investments				
Public Transit Access	Work with Metro to provide a new transit stop on campus. The transit stop will include a shelter and provide real-time bus information as well as a turnaround area on site.	Students/Staff/Faculty/Visitors	Implement	
Public Transit Access	Subsidize the purchase of student and staff/faculty bus passes.	Students/Staff/Faculty	Implement	
Bicycle Access	Secured bicycle parking will be provided via 100 exterior and 66 interior spaces. This equates to over 3 times the City of Portland Land Use Code parking requirements totaling 166 bicycle spaces. This equates to over 3 times the required amount of bicycle parking.	Students/Staff/Faculty/Visitors	Implement	Continue to monitor and provide additional bicycle parking if demand increases.
Bicycle Access	Improve Sherwood Street by providing bicycle lanes.	Students/Staff/Faculty/Visitors	Implement Sherwood Street bicycle lanes.	
Bicycle Access	Provide on-site showers and lockers	Students/Staff/Faculty	Implement	
Pedestrian Access	Improve the pedestrian network by providing new sidewalks along Sherwood Street and a new crosswalk across Sherwood Street at Veranda Street.	Students/Staff/Faculty/Visitors	Implement Sherwood Street improvements.	
Constrained Parking	Parking on-site will be constrained to a parking garage designed to accommodate 708 parking spaces (only 692 to be used for vehicular parking and 16 for 66 bicycle parking spaces) in addition to 14 at-grade parking spaces.	Students/Staff/Faculty	Implement	Ongoing parking management as long-term phasing is completed.
Water Access/Marine Feature	Build a modern pier over the footprint of the current pier, in order to accommodate water shuttles and taxis.	Students/Staff/Faculty/Visitors		Implement
Incentives				
Flexible Work and/or On-line Learning	Provide a hybrid course format that allows online and on-site learning.	Students/Staff/Faculty	Implement	
Flexible Work and/or On-line Learning	Flexible scheduling (ability to start-stop some class hours outside of peak travel periods, e.g.)	Students/Staff/Faculty	Implement	
Parking Pricing	Parking charge for students, staff/faculty (unbundled parking costs - not included with tuition and not provided as a benefit to staff/faculty)	Students/Staff/Faculty	Implement	
Transit Incentives	Pre-tax transit pass purchasing for employees.	Staff/Faculty	Implement	
Preferential Parking	Prioritize parking for carpools.	Students/Staff/Faculty	Implement	
	Carpools will receive reduced price parking.	Students/Staff/Faculty	Implement	
Programmatic Incentives	Join the Emergency Ride Home program through the GOMAINE program.	Students/Staff/Faculty	Implement	
Electric Vehicle Parking	Monitor EV parking demand study and increase the chargers, their power, and number of EV-ready spaces as demand dictates.	Students/Staff/Faculty/Visitors		Monitor usage and provide additional EV charging infrastructure as needed.
Information/Education/Marketing				
Education on Travel Choices	Join GOMAINE. Encourage staff/faculty to join Go Maine & Record “green trips”.	Students/Staff/Faculty	Implement	
Education on Travel Choices	Provide a website that will present travel choices to campus available to students/staff/faculty with links to resources. Information on bicycling routes, bicycle parking infrastructure, and walking infrastructure will be provided on the website	Students/Staff/Faculty/visitors	Implement	
Education on Travel Choices	The TDM coordinator will send out organizational emails promoting alternative modes/TDM program to staff/faculty and students.	Students/Staff/Faculty	Implement	
Education on Travel Choices	The TDM coordinator will facilitate carpools by maintaining a database of interested parties; commuters will be matched with others who live near them or can access a park and ride location along their route. The Roux Institute at Northeastern University will also participate in the Maine DOT/Maine Turnpike Authority GOMAINE, which facilitates carpools across nearby sites and provides participants with rewards for carpooling	Students/Staff/Faculty	Implement	
Education on Travel Choices	The TDM coordinator will provide new students, staff, and faculty with orientation packets describing non drive-alone commutes and incentives.	Students/Staff/Faculty	Implement	
Education on Travel Choices	Provide transit maps and schedules on-campus.	Students/Staff/Faculty/Visitors	Implement	
Education on Travel Choices	Provide a real-time electronic screen displaying transit information – ‘Next Bus’ at bus stop.	Students/Staff/Faculty/Visitors	Implement	

Table 6 TDM Strategies – Commitments			Timeline Years	
Category	**Strategy**	**Targeted User/Group**	**Short-term (0-2 Years)**	**Long-Term (2+ Years)**
Future Investments				
Bicycle Access	Consider installing a bike repair station	Students/Staff/Faculty/Visitors	Investigate	Implement
Bicycle Access	Consider providing electric bike charging	Students/Staff/Faculty/Visitors		Investigate through surveys to determine if this would be effective and used.
Portland BIKESHARE	Investigate establishing a new BIKESHARE station on campus. Currently, there are no BIKESHARE stations located in East Deering.	Students/Staff/Faculty/Visitors	Investigate	Implement as demand dictates
Car Share	Explore providing one car share vehicle on campus.	Students/Staff/Faculty		Provide car share parking as future program is developed.

7

Monitoring and Reporting Plan

Program monitoring and reporting are important components of a successful TDM program because they provide a quantitative benchmark of the program's effectiveness in reducing single occupancy vehicle trips and resulting parking demand over time. The monitoring process provides feedback on whether progress toward the TDM targets is being made. The TDM Coordinator will use the information gathered through the monitoring plan to direct the ongoing implementation of the TDM program, allowing for adjustments and the introduction of new strategies.

The TDM Coordinator will be responsible for monitoring the efficacy of the TDM plan and making adjustments to the plan as needed to achieve modal split targets.

An annual survey will be administered to gather data for student, staff, and faculty commuting characteristics. Surveys provide a qualitative understanding of how well TDM program elements are working. This survey will ask respondents how they commuted to campus for the last five days and will provide a comprehensive list of mode share choices. Additional information including vehicle ownership, parking costs, and mode share barriers and incentives will also be collected. Parking utilization count data will be obtained annually to support the monitoring process. The TDM Coordinator will obtain data to quantify the hourly in, out, and number of parked vehicles in the garage. This data will help to establish the resulting parking demand for the enrollment at that time.

Should additional data such as bicycle parking counts or other TDM tracking efforts be needed to support the monitoring effort, additional data will be collected. This might include the following data needs:

- Should bicycle parking utilization counts be needed to support the monitoring process, the number of bicycles parked on campus will be tracked. This data will be reviewed for trends in

bicycle usage over time to determine if bicycle parking is adequate and meets the needs of the bicyclists.

› The TDM Coordinator will work with Metro to track the transit usage of commuters via the pass program implemented. The data for the same time period as outlined above in the surveys will be obtained and reviewed.

The results of monitoring effort will be reported to the City of Portland on an annual basis by May 15th using the standard reporting tools provided by the city.



The Roux Institute at Northeastern University

Transportation Demand Management Plan

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Table of Contents

1 Introduction 1

1.1 Program Summary and Project Status 1
1.1.1 Existing Conditions 2
1.1.2 Proposed Development Program 2

2 Mobility Context 4

2.1 Vehicular Access and Circulation 5
2.2 Walking and the Pedestrian Environment 5
2.2.1 Existing Conditions 5
2.2.2 Future Commitment 6
2.2.3 Potential Future MaineDOT Infrastructure 6
2.3 Bicycling Environment and Facilities 6
2.3.1 Existing Conditions 6
2.3.2 Future Commitment 7
2.3.3 Potential Future MaineDOT Infrastructure 7
2.3.4 Other Potential Future Infrastructure 8
2.4 Public Transit 10
2.4.1 Existing Conditions 10
2.4.2 Future Opportunities 11
2.5 Ride-Hailing 12
2.6 Current Parking Policies 12
2.7 Existing TDM Efforts 12
2.8 Future TDM Framework 13

3 TDM Coordinator 14

4 Baseline TDM Data 16

4.1 Modal Split 16
4.1.1 Roux Institute at Northeastern University Transportation Survey 16
4.1.2 Traffic Movement Permit Mode Split Data 17
4.2 Trip Generation 17
4.3 Proposed Parking Supply/Demand 18

5 TDM Mode Split Targets 19

6 Mode Split Target Strategies 20

7 Monitoring and Reporting Plan 23

List of Tables

Table No.	Description	Page
Table 1	Development Program	2
Table 2	Transportation Survey Mode Split Data	17
Table 3	TMP Mode Split	17
Table 4	Trip Generation	18
Table 5	Automobile Mode Split Targets	19
Table 6	TDM Strategies – Commitments	21

List of Figures

Figure No.	Description	Page
Figure 1	Proposed Site Plan	3
Figure 2	Campus Transportation Access	5
Figure 3	15 Minute Bike Shed Zone	7
Figure 4	Existing and Potential Future Bicycle Facilities	9
Figure 5	Public Transit Access	11

1

Introduction

Pursuant to Section 17.3 of the City of Portland Technical Manual, the Roux Institute at Northeastern University's Transportation Demand Management Plan (TDM) provides a cohesive approach to establish a targeted set of strategies aimed at reducing single occupancy vehicle trips to and from the proposed campus in Portland, Maine. The TDM plan describes how the Roux Institute at Northeastern University will provide information and education, enhance alternative transportation infrastructure and mobility, and incentivize students, faculty, and staff so that they use more sustainable, multimodal commuting options such as walking, bicycling, transit, carpooling and telecommuting. The Roux Institute at Northeastern University is committed to ongoing annual surveying to monitor the implementation and success of the TDM plan.

1.1 Program Summary and Project Status

In 2020, the Roux Institute at Northeastern University was launched to build expertise at the intersection of humans and technology. The campus is currently temporarily operating at 100 Fore Street but will be relocating to the redeveloped B&M Baked Beans facility. In its permanent waterfront location in East Deering, the Roux Institute at Northeastern University will continue to provide educational, research, and collaborative programs in areas including artificial intelligence, computer and data sciences, digital engineering, advanced life sciences, and medicine. The Roux Institute at Northeastern University offers post-graduate degrees and certifications, conducts research, assists start-ups, and partners with private, public and non-profit organizations. The mission of the Roux Institute at Northeastern University is *a vision to enable the creation of a synergistic technology and life science-driven economy and workforce, the Roux Institute at Northeastern University designs, curates, and integrates learning, research, and entrepreneurial solutions in collaboration with industry, academic institutions, and community organizations to catalyze talent development and economic impact throughout Maine*.

In February 2023, the Portland City Council approved the Institutional Overlay Zone for the campus at the old B&M Baked Beans site. The project team is currently embarking on the site plan review and public input process with the City of Portland, which includes the preparation and submission of a MaineDOT Traffic Movement Permit application. Permits are expected by the summer of 2024, when construction will begin, with an opening date in 2027. The campus will continue to grow over time in subsequent years and phases.

1.1.1 Existing Conditions

The Roux Institute at Northeastern University currently leases 84,000 sf of institutional space at 100 Fore Street adjacent to the East End neighborhood and near the waterfront in downtown Portland. In the fall of 2023, there were 665 enrolled students and 175 staff, researchers and faculty. There are currently 16 graduate programs in computer and data science, analytics, cloud software, cybersecurity, life sciences, and project management. To realize its full potential, the Roux Institute at Northeastern University is seeking to relocate its campus and expand in size as described in the following section.

1.1.2 Proposed Development Program

The campus will be anchored by a 238,000 square foot Learning, Research and Collaboration building and the 58,000 square foot Bean Building housing a start-up incubator program. By 2032, the campus plans to accommodate 3,123 graduate students in addition to supporting uses as shown in Table 1. An 8,000 square foot café and a day care center providing care for 50 children will be located on-site primarily for the families of students, staff, and faculty. In addition to its academic offerings, the campus will benefit the community by contributing to local economic growth and providing open space along the waterfront, active transportation accommodations throughout the site, job creation, and innovation space. The site plan is shown in Figure 1.

Table 1 Development Program

Program Component		2027 (Opening)	2032
Day care center		50 Children	50 Children
Academic Café		8,000 sf	8,000 sf
Roux Institute at Northeastern University	Graduate students	1,899 students	3,123 students
	Faculty, Staff, and Researchers[1]	225 staff	300 staff
	Embedded startup[1]	60 staff	100 staff
	JAX and Other Signature Partners[1]	55 staff	64 staff
	Affiliated Users[2]	35 visitors	100 visitors
	Special Events (daily)	150 attendees	150 attendees

1 All staff counts are in full-time equivalents.
2 Affiliated Users is a broad category for occasional visitors such as corporate learners, investors, donors, mentors, and neighbors.

The garage has been designed to accommodate 624 vehicular parking spaces, and parking for 66 bicycles. In addition to the garage spaces, there will be 14 parking spaces provided at grade on the site. All on-site parking will be paid parking, and a parking office will be created to manage permitting and enforcement for the campus. Parking costs and regulations may vary between categories of users (students, staff, faculty, visitors, etc.). Parking will be shared between uses

within the campus only. This development will not rely on any off site on-street parking. The campus may include on-site car sharing, enabling travel to and from the site using other modes, with the comfort that vehicles are available if necessary. The TDM measures presented in this plan will be critical to maintaining the expected parking demand.

Figure 1 Proposed Site Plan



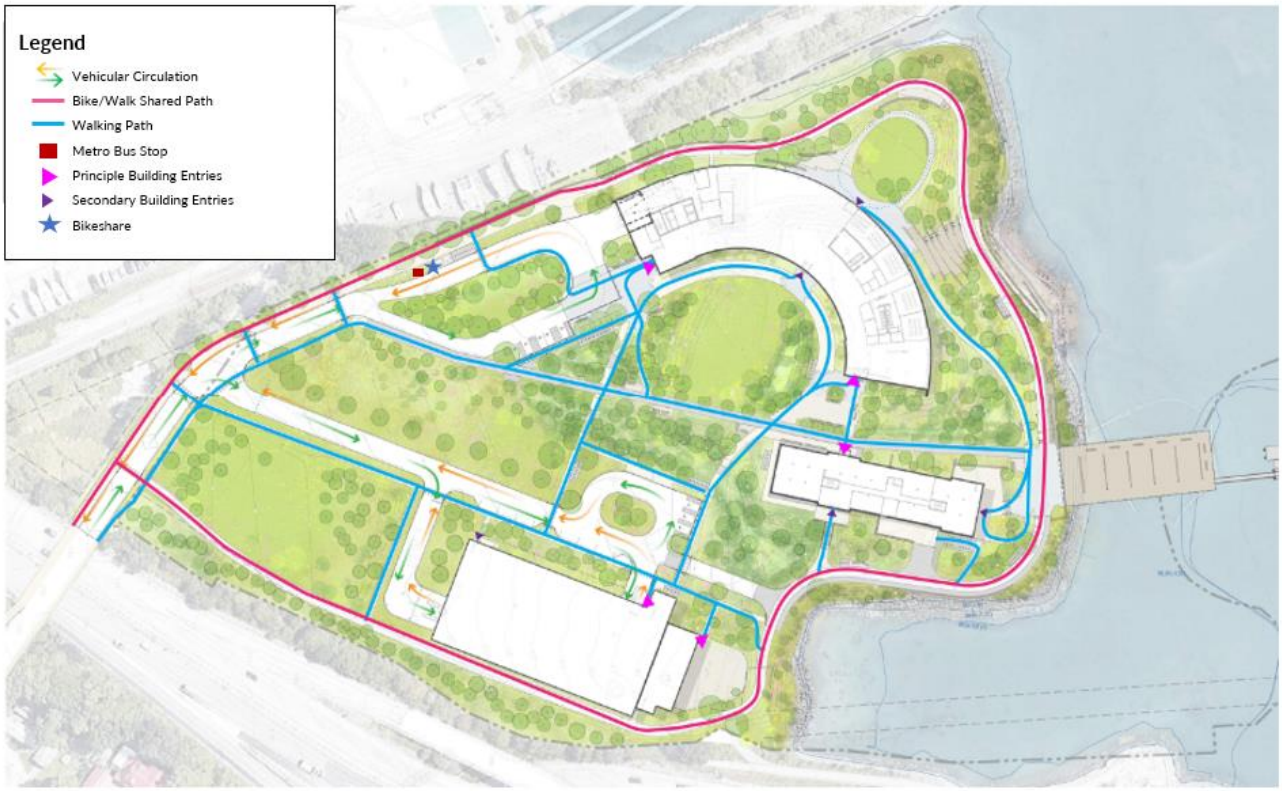
2

Mobility Context

For a TDM plan to be successful in shifting drive alone vehicle trips to transit, carpool, walk, and bicycle trips, it is essential to understand the multimodal transportation system surrounding the site. This section describes the existing transportation network challenges and future opportunities the Roux Institute at Northeastern University faces in redeveloping the site for their permanent campus.

The proposed waterfront site is located in East Deering adjacent to a marina and residential neighborhood comprising of single and multifamily homes as well as a commercial area which includes restaurants, bars, auto mechanics, and offices. I-295 runs along the western edge of the site, however the site will be well connected to the East Deering neighborhood, Back Cove, and the Portland Peninsula on the eastern promenade via vehicle, pedestrian, bicycle, transit and potential water taxi facilities. As shown in Figure 2, there are several promising opportunities to enhance and expand these transportation systems as part of the project to improve transportation mobility in and around the campus.

Figure 2 Campus Transportation Access



2.1 Vehicular Access and Circulation

A single vehicular access point to the site is provided via Sherwood Street at the intersection with Veranda Street through a 40-foot-wide highway underpass. Sherwood Street will continue to serve as vehicular access into and out of the campus in the future. The site is in close proximity to I-295, Route 1, Washington Avenue, and Baxter Boulevard. The traffic signal system along Washington Avenue is a traffic responsive system operating with high efficiency. Intersections of Washington Avenue at Veranda Street, at Presumpscot Street, and at Ocean Avenue are each signalized intersections.

2.2 Walking and the Pedestrian Environment

2.2.1 Existing Conditions

The surrounding East Deering neighborhood provides pedestrian amenities including sidewalks along Washington Avenue and Veranda Street. A sidewalk runs along the west side of Bates Street but narrows and is periodically blocked by utility poles. There is no sidewalk present on the east side of Bates Street. The Back Cove trail (multi-use path) runs along the Back Cove and Tukey's Bridge near the site. The main roadway access to the site is via Sherwood Street which consists of a 30-foot-wide roadway in a 50-foot wide right of way and includes non-continuous sidewalk segments mostly on the north side. The pedestrian connectivity to the Portland

Peninsula is accessible from the Back Cove Trail across the west side of Tukey's Bridge. The sidewalk connecting from the intersection of Washington Avenue/Veranda Street is narrow and adjacent to vehicular traffic on the ramp to I-295. The sidewalk merges with the Back Cove Trail which adds bicycle and pedestrian demand to a narrow, shared use path over Tukey's Bridge. There is no existing direct connection to this shared use path from the campus.

2.2.2 Future Commitment

The Roux Institute at Northeastern University will improve pedestrian safety and connectivity to the East Deering neighborhood from the campus by providing continuous sidewalks on both sides of Sherwood Street. A crosswalk will be implemented across Sherwood Street at Veranda Street. Once on the site, pedestrian facilities will connect site uses and points along the waterfront. Improvements to pedestrian connections will increase walkability for the site.

2.2.3 Potential Future MaineDOT Infrastructure

The infrastructure described above will be constructed to allow for future connections to potential MaineDOT infrastructure. MaineDOT is contemplating a 14 foot wide shared use path on a new bridge parallel to Tukey's Bridge on the east side that would provide a direct connection from the campus to the Portland Peninsula. In addition, a shared use path under Tukey's Bridge would improve pedestrian access to and from the campus to the Back Cove trail and for pedestrians traveling between East Deering and the Portland Peninsula using the future shared use path bridge. These new shared use paths would provide wider, safer, and more comfortable accommodations for pedestrians and improve connectivity.

2.3 Bicycling Environment and Facilities

2.3.1 Existing Conditions

Bicycle facilities are present in the East Deering neighborhood on Washington Avenue including buffered bike lanes north of Presumpscot Street and faded sharrows along Veranda Street. Bates Street provides a bike lane from Washington Avenue to Baxter Boulevard. The Back Cove trail (multi use path) runs along the Back Cove and Tukey's Bridge near the site. There are currently no bicycle facilities on Sherwood Street. Similar to the discussion above describing the pedestrian access across the shared use path on Tukey's Bridge, bicyclists must also use the narrow path or bike to Baxter Boulevard and the Back Cove Trail to connect to the Portland Peninsula. Although this shared use path provides access to the Back Cove trail, it does not provide direct access to the campus. There are 8 public U-racks totaling 16 bicycle parking spaces located within the 970 Baxter Boulevard parking lot.

Walkscore.com rates East Deering with a Bikescore of 58/"Bikeable" indicating some bike infrastructure is present. The 15-minute bike shed zone from the campus is illustrated in Figure 3.

Figure 3 15 Minute Bike Shed Zone



2.3.2 Future Commitment

The Roux Institute at Northeastern University is dedicated to creating a safer, complete street along Sherwood Street to accommodate bicyclists into and out of the site by providing bicycle lanes. The campus will provide 166 bicycle parking spaces for students, staff, faculty and visitors. This quantity is more than triple the required amount of bicycle parking per the Portland Technical Manual. Shower and locker facilities will be provided for those commuters who bicycle to campus. The Roux Institute at Northeastern University will explore providing a Bike Fix-it Station for bike commuters and other visitors to the site.

2.3.3 Potential Future MaineDOT Infrastructure

The infrastructure described above will be constructed to allow for future constructed connections to potential MaineDOT infrastructure. MaineDOT is contemplating a 14 foot wide shared use path on a new bridge parallel to Tukey's Bridge on the east side that would provide a direct connection from the campus to the Portland Peninsula. In addition, a 10 foot wide shared use path under Tukey's Bridge would improve bicycle access from the campus to the Back Cove trail and bicycle connectivity between East Deering and greater Portland.

2.3.4 Other Potential Future Infrastructure

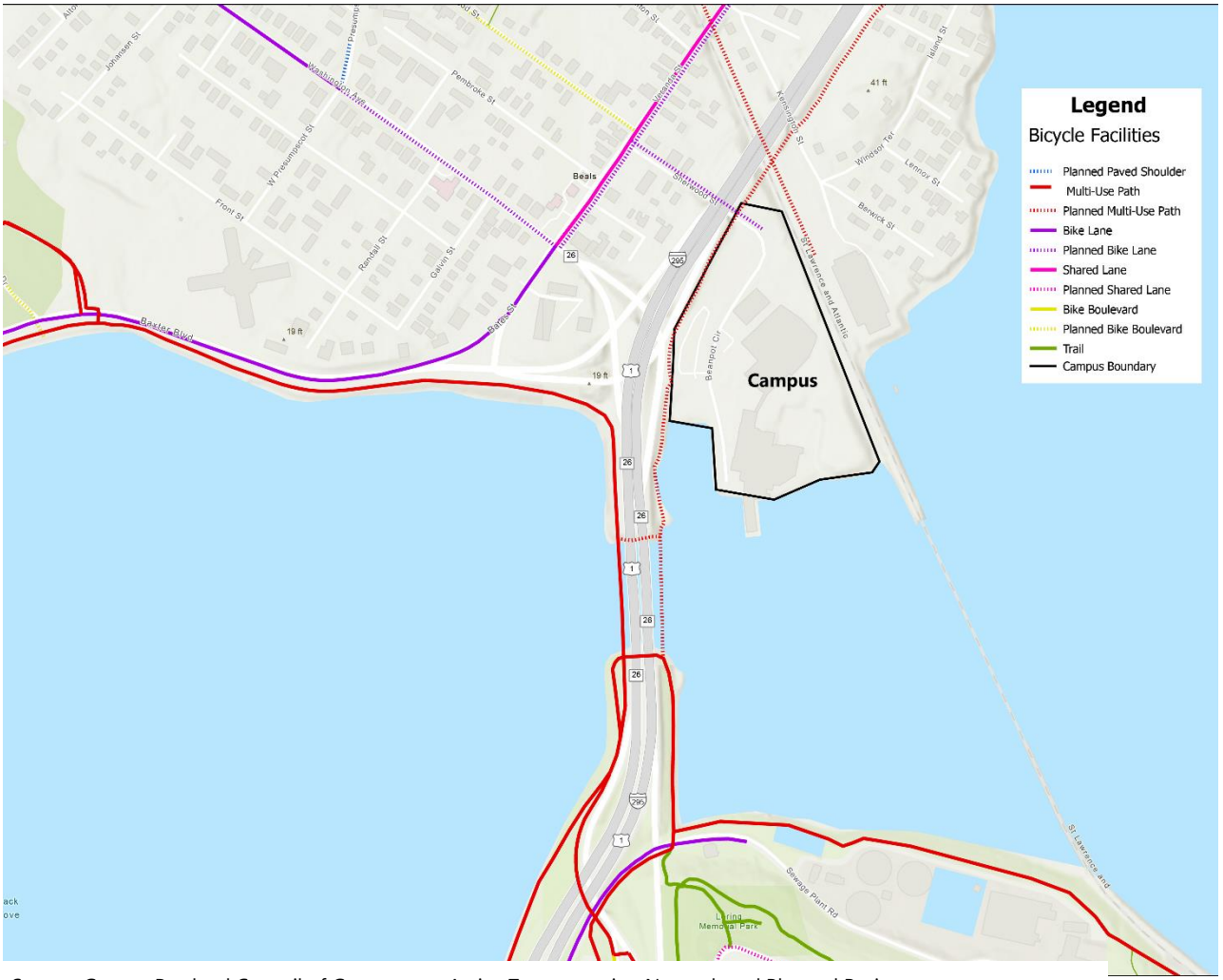
The City of Portland is currently working on the *Baxter Boulevard | Bates Street | Veranda Street Bikeway Project*[1] to implement buffered bicycle lanes on Veranda Street and a two-way bi-directional separated bike lane on Bates Street. Other potential opportunities for multi-use paths in the area include the Berlin Subdivision railroad right-of-way to points north ending at the Yarmouth Park and Ride on Exit 15 of I-295. Additionally, the Martin's Point Shared Use Path study considered a shared use path from Sherwood Street to the recently installed shared use path west of the Martin's Point Bridge starting at Wordsworth Street.

The City of Portland and Tandem Mobility have partnered to provide a bike share system in Portland. There are over 200 bicycles at over 40 stations predominately throughout the Portland peninsula. Pedal bikes and electric bikes are available by the minute and memberships are available on a monthly or yearly basis. There are currently no Portland BIKESHARE locations within the East Deering neighborhood in close proximity to the site, however there are a few on the East End across Tukey's Bridge. There is an opportunity to explore providing a new station on the campus which would expand the BIKESHARE network to the East Deering neighborhood.

Figure 4 presents the existing and potential future bicycle facilities surrounding the campus.

[1] Baxter Boulevard| Bates Street| Veranda Street Bikeway Project https://portland.civilspace.io/en/projects/better-bikeways-initiative

Figure 4 Existing and Potential Future Bicycle Facilities



Source: Greater Portland Council of Government Active Transportation Network and Planned Projects
https://gpcog.maps.arcgis.com/apps/View/index.html?appid=d5d7dbbc69534242b5fd4092c78f26e4

2.4 Public Transit

2.4.1 Existing Conditions

As shown in Figure 5, two bus lines currently stop near the campus: Metro Route 7 and Metro Routes 9A / 9B. Route 7 provides service between Portland and Falmouth with a stop at the Metro Pulse on the Peninsula as well as a stop near the campus at Veranda Street/Sherwood Street approximately a quarter of a mile from the center of the campus. Routes 9A/9B provide circular bus service between downtown Portland and North Deering with service running along Washington Avenue and Congress Street. Route 9A/9B stops on Washington Avenue near the site at Galvin Street and Veranda Street respectively which is under a half mile from the site. Bus transfers can be made at the Pulse and other stops on the Peninsula to reach the rest of Portland and several outlying towns.

Buses run continuously throughout the day, readily accommodating the varied schedules of students and other campus users. Metro BREEZ express bus service to Yarmouth, Freeport, and Brunswick and the Husky Line to Westbrook and Gorham establish a regional footprint for transit service. Ten local and express routes connect the campus to most of the Portland area with no more than one transfer.

During both weekday peak hours Metro Route 7 is expected to operate at 50% or less capacity. The Metro bus policy capacity of 52 passengers per bus was assumed. There are 35 seats per bus and a bus is considered “full” at 150% of the seated capacity. There is one bus per peak hour on this route. In 2023, on an average weekday during the AM and PM hours there were 9 and 22 boardings on Route 7 respectively, which leaves plenty of capacity on Route 7 to accommodate site related traffic.

In addition to the local Metro system, the Portland Transportation Center (PTC) in Thompson’s Point provides regional bus and train service. Concord Coach Lines runs bus service from Portland to Boston, Massachusetts, Logan International Airport, and New York City as well as points north of Portland. The Amtrak Downeaster provides train service between Brunswick and Boston with a stop in Portland. Greyhound provides bus service between East Bayside in Portland and Boston, Massachusetts.

The Roux Institute at Northeastern University is currently subsidizing Metro bus passes at 100% for all students faculty and staff who choose to participate.

Figure 5 Public Transit Access



2.4.2 Future Opportunities

Metro is contemplating improvements to the transit system throughout Portland. In addition, the Roux Institute at Northeastern University is working with Metro to consider site specific transit accommodation for an on-campus bus stop that would connect the Roux Institute at Northeastern University to other key locations across the City, including housing, additional transportation connections, and partner organizations. The Roux Institute at Northeastern is also working with Metro and MaineDOT to identify park and ride locations where Roux students, faculty and staff can park and use Metro to travel to the site.

2.4.2.1 Transit Together Plan

In January 2023, The Portland Area Comprehensive Transportation System (PACTS) Policy Board approved the Transit Together Plan[2]. As of August 27, 2023, this plan enabled changes to Route 9 to provide more consistent 30-minute headways from 6am to 6pm on weekdays and from about 8am to 6pm on Saturdays. Route 9B will run one hour later in the evening.

In the Spring of 2024, Metro plans to make improvements to Route 7 by extending the route to the Portland Jetport via Congress Street with improved frequency and hours of operation.

[2] Transit Together - https://gpmetro.org/1644/Transit-Together---Route-and-Schedule-Ch

Frequency for Route 7 will improve from 60 to 30 minutes Monday through Saturday and services will be provided until 10pm or 11pm. The Falmouth loops will be eliminated, and Route 7 will use the Shaw's parking lot in Falmouth to turnaround. In conjunction, Route 5 service to the Jetport and Hutchins Drive will be discontinued to improve travel time between Portland and the Maine Mall. In addition, microtransit service will be implemented in east Falmouth. Microtransit riders within the zone will be able to request a ride using a smartphone app or phone call. These changes significantly increase the frequency and daily service to the campus.

2.4.2.2 Other Metro Opportunities

Metro is in the preliminary planning stages of studying how to extend Route 7 service along US Route 1 to Yarmouth. This extension could provide a bus route for campus commuters, with parking at the MaineDOT Exit 15 Park and Ride in Yarmouth.

The Roux Institute at Northeastern University is working with Metro to improve the quality and frequency of transit connections to the campus. Reduction of headways, modification of Route 5 or Route 7 to make a stop at the campus, and construction of a transit stop and turnaround on the campus, are all under consideration to further the convenience of transit for commuting to and from campus. The Roux Institute at Northeastern University will continue to promote and incentivize transit use by subsidizing transit passes for students, staff, and faculty.

2.5 Ride-Hailing

In addition to driving, transit, walking, bicycling, and carpooling, commuters have the option of using ride hailing services such as Uber, Lyft and/or traditional taxis. Although these services result in vehicle trips to and from the campus, they reduce the parking demand and allow for less vehicle ownership and more flexibility with commute mode choices.

2.6 Current Parking Policies

Parking is currently provided to staff, faculty and embedded partners at $50 per month, per spot. There are 176 parking spaces allocated for the Roux Institute at Northeastern University in the on-site garage. Embedded partners and employees who opt out of monthly parking pay $1/hour to park in the garage. Parking for visitors is also provided via a public rate of $5/hour and in adjacent, paid parking lots. Students of the Roux Institute at Northeastern University are not currently charged to park on-site but will be at the future campus.

2.7 Existing TDM Efforts

As part of this TDM plan, the Roux Institute at Northeastern University plans to bolster its current TDM efforts for the permanent campus proposed in East Deering. However, they are currently implementing TDM strategies on the existing campus at 100 Fore Street to help reduce drive alone trips:

- Appointed a transportation coordinator who surveys students, faculty and staff to develop an understanding about mode choice.

- Fully subsidizing transit passes 100% for faculty, staff and students. Posting transit related information in highly visible areas on site. Providing information on transportation commuting options including transit on the Roux Institute at Northeastern University's website.
- Offering convenient, hybrid course formats that blend online and on-site learning thus reducing the demand for commuting.
- Charging staff, faculty and embedded partners $50 per month per parking space.

2.8 Future TDM Framework

Although this document specifically addresses the TDM plan for this phase of development, it is part of a larger TDM framework for the site and supports the continued review of mode share and trip impact and the continual development of additional TDM measures as the site is further developed. Specifically, the Transportation Coordinator will conduct traffic monitoring and employee surveys to identify the mode share as development occurs and identify which of the TDM strategies and alternative modes are more successful at the site. This information will be used in future phases of development to identify accurate impacts and needs and develop additional strategies to best continue to move the needle to reduce vehicle trips generated by the site.

This document outlines a transition from an initial opening year mode share to a mode share at full occupancy of this phase of development that will be consistent with the aspirational mode shares identified for the long term buildout of the site in the zone change process. Future phases will continue to build on the success of this TDM plan and reach mode share targets that continue to reduce vehicular trips.

3

TDM Coordinator

The Roux Institute at Northeastern University will designate a TDM coordinator to oversee the administration of the TDM plan and the annual surveying and reporting process.

The Roux Institute at Northeastern University plans to follow industry best practice by appointing a campus-wide transportation coordinator. The TDM Coordinator will collect data on the TDM progress to ensure it evolves as the site develops. Once the site is operational, the TDM Coordinator will conduct a transportation survey for students, staff, and faculty to establish a baseline for future drive alone mode share reduction goals. They will also collect and disseminate information (including non-automobile travel options) on-site and organize outreach events and campaigns to encourage TDM participation. The TDM Coordinator will promote alternative transportation choices to educate those commuting to and from the campus and coordinate the implementation of TDM strategies to reduce single occupancy vehicle (SOV) trips. In addition, the TDM Coordinator will work with the City of Portland, Metro, GoMaine, car share, and bike share programs to improve non-SOV mode shares. The responsibilities of the TDM Coordinator include the following:

- Promote alternative transportation choices to students, staff, faculty, and visitors to reduce single occupant vehicles (SOV) trips.
- Coordinate the implementation of TDM strategies with students, staff, and faculty and conduct orientations to educate those commuting to and from the campus regarding their transportation options.
- Monitor bike rack usage and make recommendations as needed to accommodate potential growing demand.
- Coordinate with the City of Portland, Metro, GoMaine, car share and bike share, and other potential partners to improve access to non-SOV modes.
- Conduct annual Transportation Monitoring and activities necessary to measure the effectiveness of the TDM program in achieving the mode share reduction target.
- Administer and review TDM surveys on a yearly basis.

- Complete the standard City of Portland TDM Reporting Form, which will summarize how effective the various strategies have been, mode share data based on the surveys and program success and barriers.
- File annual TDM reports by May 15th of each year with the City of Portland.

The TDM Coordinator will be the primary point of contact for students, staff, and faculty regarding the TDM plan. The TDM Coordinator will develop strategies and incentives for students, staff, faculty, and visitors where applicable. The TDM Coordinator will also collaborate with commuters prior to when they start to inform them of the robust network of alternative mode choices available to them.

4

Baseline TDM Data

Baseline travel demand and supply data for the campus has been quantified for the Traffic Movement Permit (TMP) Application being submitted to MaineDOT as part of the site plan review process. Baseline data includes estimated mode split, future trip generation estimates, and proposed parking supply and future demand estimates. Reviewing survey data and how the existing students, faculty and staff are currently commuting to campus, and how they expect to commute to the proposed campus, provides insight to which alternative modes may have the greatest potential to reduce drive alone trips.

4.1 Modal Split

4.1.1 Roux Institute at Northeastern University Transportation Survey

The Roux Institute at Northeastern University conducted transportation surveys on a quarterly basis throughout 2022 and 2023 which collected responses from students, staff, and faculty at the existing 100 Fore Street campus. The survey asked how the respondents commuted to campus and then how they imagine they will commute to the new campus in East Deering. The results of the survey mode share data are presented in Table 2. It is important to note that the data collected slightly varied throughout the time of year. Additionally, the Roux Institute at Northeastern University is an evolving, growing Institute currently in a temporary location and this data is only representative of a portion of students, staff and faculty. Based on feedback collected from the survey, it is anticipated that transit and bicycle trips will increase, walk trips will decrease, and drive trips will slightly decrease due to the proposed campus location and existing transportation system in East Deering. The Roux Institute at Northeastern University will continue to survey on a quarterly basis and make adjustments as circumstances evolve.

Table 2 Transportation Survey Mode Split Data

	Existing Commute at 100 Fore Street		
	August 2022	April 2022	January 2023
Drive	77%	72%	73%
Transit	4%	3%	4%
Walk	13%	16%	19%
Bike	6%	7%	4%
Other	0%	2%	0%

From the August 2022 survey, 135 people responded, of which 40% were students, 35% were full-time staff, 13% were full-time faculty, and 12% were other.

4.1.2 Traffic Movement Permit Mode Split Data

In addition to the data collected as part of the transportation surveys, expected mode share splits assumed in the Traffic Movement Permit (TMP) by land use are also provided in Table 3. The TMP mode splits are slightly more conservative in terms of analyzing vehicular traffic impact on the study area intersections. As additional bicycle and pedestrian connections are constructed in future years, it is likely that those mode shares will increase.

Table 3 TMP Mode Split

Population	Drive	Transit	Walk/Bike
Students	80%	10%	10%
All Other Populations	90%	5%	5%

Source: TMP indicates mode share assumptions presented in the Traffic Movement Permit

4.2 Trip Generation

As part of the TMP application, a trip generation analysis was conducted based on the 2032 development program presented in Table 1 using Institute of Transportation Engineers (ITE) publication, Trip Generation 11th edition as well as a custom trip generation methodology for the academic use of the site. The following assumptions were made to estimate student trip generation based on data from the campus:

- 43% of student enrollment are present on campus each day.
- 40% are daytime students and 60% are evening students.

Mode shares that were previously presented in Table 3, and applicable on site, internal capture trip rates were applied to the trip generation estimate to determine the external vehicle, pedestrian and walk trips as well as transit trips. The resulting estimated trip generation for the campus is presented in Table 4. The campus is expected to generate 237 morning and 521 evening peak hour vehicle trips, 20 morning and 51 evening peak hour transit trips, and 20 morning and 51 evening peak hour pedestrian and bicycle trips.

Table 4 Trip Generation

	Vehicle Trips	Transit Trips	Ped/Bike Trips
AM Peak Hour			
In	227	20	20
Out	10	0	0
Total	237	20	20
PM Peak Hour			
In	276	30	30
Out	245	21	21
Total	521	51	51

Source: Trip Generation Analysis presented in the Traffic Movement Permit

4.3 Proposed Parking Supply/Demand

A parking analysis was performed to estimate parking demand for the Roux Institute at Northeastern University. It was determined that parking demand peaks during the overlap between day and night users. Based on travel patterns of existing daytime and night students, the future enrollment will result in a peak demand of 581 spaces in the opening year and if the auto mode share stays as high as outlined in the TMP, demand would increase to 881 spaces in 2032.

The Roux Institute at Northeastern University is planning on providing parking on campus in a proposed parking garage designed to accommodate 610 vehicular parking spaces and 66 bicycle parking spaces. In addition to the garage spaces, there will be 14 parking spaces provided at grade on site. The parking garage will be constructed in 2027 to accommodate the demand for this phase.

In order to help mitigate the amount of vehicular traffic traveling to the campus, The Roux Institute at Northeastern University is actively exploring opportunities for satellite parking spots at existing park and ride locations within a short commute to the campus via tying into nearby transit routes or a Northeastern University-owned shuttle service.

To ensure parking usage in the structured garage does not exceed the permitted supply for each phase of development, the Roux Institute at Northeastern University will collect annual parking data to determine the number of vehicles parked throughout the day and evening. The TDM coordinator will obtain gate data for in, out, and occupancy counts on an hourly basis during the spring to coincide with the annual survey week. Moving into the future, the TDM coordinator will be working to reduce the automobile mode share to the site so that the garage is able to accommodate campus growth with that parking supply.

5

TDM Mode Split Targets

The TDM plan establishes short-term and long-term modal split targets.

The TDM mode split target includes goals for reducing vehicle trips and increasing multimodal trips. Based on the future transportation system the campus will be supported by and TDM measures that will be implemented, the short and long-term targets that are proposed as part of this TDM plan are presented in Table 5. The mode share goals are within range of the City's *One Climate Future* document that sets a Key Transportation Milestone that by 2035, 26% of trips in the city will use alternative transportation modes, (up from 12%)[3]. The long-term goals are based on mode splits presented as part of the approved Institutional Development Plan for the Roux Institute at Northeastern University. The Roux Institute at Northeastern University is committed to implementing the TDM strategies presented in the following Section 6 to work towards achieving these mode split targets. The targets will be reviewed and updated based upon the annual TDM reporting process.

Table 5 Automobile Mode Split Targets

Population	Mode Split Targets	
	Short-term	Long-term
Students	80%	65%
All Other Populations	90%	75%

[3] https://www.oneclimatefuture.org/wp-content/uploads/2021/02/OneClimateFuture_FinalJan2021_Downsized.pdf

6

Mode Split Target Strategies

The TDM plan includes a set of strategies aimed at achieving the TDM goals described above. The strategies are targeted to students, staff, and faculty traveling to and from the campus in East Deering. The Roux Institute at Northeastern University is committed to enhancing the multimodal transportation systems around the campus including providing improved pedestrian and bicycle facilities and transit access/service.

As part of the quarterly transportation survey, the Roux Institute at Northeastern University gathered data on which TDM strategies would more likely encourage students, staff, and faculty to commute differently to the proposed campus. The feedback indicates that Roux Institute at Northeastern University commuters are most likely to shift to a different mode share when showers, lockers and bike storage is available, there is a credit system for sustainable commuting, a bus route is provided from downtown, a park and go is available and bike share is available for commuters. Additional open-ended comments were provided and are also reflected in the TDM strategies presented in this section.

Table 6 below presents the strategies that the Roux Institute at Northeastern University is committed to fulfilling which are grouped into three main categories: Infrastructure/Transit/Mobility Improvements and Contributions; Incentives; and Information/Education/Marketing. These commitments include timelines for implementation.

Table 6 TDM Strategies – Commitments			Timeline Years	
Category	**Strategy**	**Targeted User/Group**	**Short-term (0-2 Years)**	**Long-Term (2+ Years)**
Investments				
Public Transit Access	Work with Metro to provide a new transit stop on campus. The transit stop will include a shelter and provide real-time bus information as well as a turnaround area on site.	Students/Staff/Faculty/Visitors	Implement	
Public Transit Access	Subsidize the purchase of student and staff/faculty bus passes.	Students/Staff/Faculty	Implement	
Bicycle Access	Secured bicycle parking will be provided via 100 exterior and 66 interior spaces. This equates to over 3 times the City of Portland Land Use Code parking requirements totaling 166 bicycle spaces.	Students/Staff/Faculty/Visitors	Implement	Continue to monitor and provide additional bicycle parking if demand increases.
Bicycle Access	Improve Sherwood Street by adding a shared use path.	Students/Staff/Faculty/Visitors	Implement Sherwood Street bicycle lanes.	
Bicycle Access	Provide on-site showers and lockers	Students/Staff/Faculty	Implement	
Pedestrian Access	Improve the pedestrian network by providing a new sidewalk and a shared use path along Sherwood Street and a new crosswalk across Sherwood Street at Veranda Street.	Students/Staff/Faculty/Visitors	Implement Sherwood Street improvements.	
Constrained Parking	Parking on-site will be constrained to a parking garage designed to accommodate 624 parking spaces in addition to 14 at-grade parking spaces.	Students/Staff/Faculty	Implement	Ongoing parking management as long-term phasing is completed.
Water Access/Marine Feature	Build a modern pier over the footprint of the current pier, in order to accommodate water shuttles and taxis.	Students/Staff/Faculty/Visitors		Implement
Incentives				
Flexible Work and/or On-line Learning	Provide a hybrid course format that allows online and on-site learning.	Students/Staff/Faculty	Implement	
Flexible Work and/or On-line Learning	Flexible scheduling (ability to start-stop some class hours outside of peak travel periods, e.g.)	Students/Staff/Faculty	Implement	
Parking Pricing	Parking charge for students, staff/faculty (unbundled parking costs - not included with tuition and not provided as a benefit to staff/faculty)	Students/Staff/Faculty	Implement	
Preferential Parking	Prioritize convenient garage parking for carpools.	Students/Staff/Faculty	Implement	
	Carpools will receive reduced price parking.	Students/Staff/Faculty	Implement	
Programmatic Incentives	Join the Emergency Ride Home program through the GOMAINE program.	Students/Staff/Faculty	Implement	
Electric Vehicle Parking	Monitor EV parking demand study and increase the chargers, their power, and number of EV-ready spaces as demand dictates.	Students/Staff/Faculty/Visitors		Monitor usage and provide additional EV charging infrastructure as needed.
Information/Education/Marketing				
Education on Travel Choices	Join GOMAINE. Encourage staff/faculty to join Go Maine & Record “green trips”.	Students/Staff/Faculty	Implement	
Education on Travel Choices	Provide a website that will present travel choices to campus available to students/staff/faculty with links to resources. Information on bicycling routes, bicycle parking infrastructure, and walking infrastructure will be provided on the website	Students/Staff/Faculty/visitors	Implement	
Education on Travel Choices	The TDM coordinator will send out organizational emails promoting alternative modes/TDM program to staff/faculty and students.	Students/Staff/Faculty	Implement	
Education on Travel Choices	The TDM coordinator will facilitate carpools by maintaining a database of interested parties; commuters will be matched with others who live near them or can access a park and ride location along their route. The Roux Institute at Northeastern University will also participate in the Maine DOT/Maine Turnpike Authority GOMAINE, which facilitates carpools across nearby sites and provides participants with rewards for carpooling	Students/Staff/Faculty	Implement	
Education on Travel Choices	The TDM coordinator will provide new students, staff, and faculty with orientation packets describing non drive-alone commutes and incentives.	Students/Staff/Faculty	Implement	
Education on Travel Choices	Provide transit maps and schedules on-campus.	Students/Staff/Faculty/Visitors	Implement	

Table 6 TDM Strategies – Commitments			Timeline Years	
Category	**Strategy**	**Targeted User/Group**	**Short-term (0-2 Years)**	**Long-Term (2+ Years)**
Education on Travel Choices	Provide a real-time electronic screen displaying transit information – 'Next Bus' at bus stop.	Students/Staff/Faculty/Visitors	Implement	
Future Investments				
Bicycle Access	Installing a bike repair station	Students/Staff/Faculty/Visitors	Implement	
Bicycle Access	Consider providing electric bike charging	Students/Staff/Faculty/Visitors		Investigate through surveys to determine if this would be effective and used.
Portland BIKESHARE	Establish a new BIKESHARE station on campus. Currently, there are no BIKESHARE stations located in East Deering.	Students/Staff/Faculty/Visitors	Implement	
Car Share	Explore providing one car share vehicle on campus.	Students/Staff/Faculty		Provide car share parking as future program is developed.

7

Monitoring and Reporting Plan

Program monitoring and reporting are important components of a successful TDM program because they provide a quantitative benchmark of the program's effectiveness in reducing single occupancy vehicle trips and resulting parking demand over time. The monitoring process provides feedback on whether progress toward the TDM targets is being made. The TDM Coordinator will use the information gathered through the monitoring plan to direct the ongoing implementation of the TDM program, allowing for adjustments and the introduction of new strategies.

The TDM Coordinator will be responsible for monitoring the efficacy of the TDM plan and making adjustments to the plan as needed to achieve modal split targets.

An annual survey will be administered to gather data for student, staff, and faculty commuting characteristics. Surveys provide a qualitative understanding of how well TDM program elements are working. This survey will ask respondents how they commuted to campus for the last five days and will provide a comprehensive list of mode share choices. Additional information including vehicle ownership, parking costs, and mode share barriers and incentives will also be collected. Parking utilization count data will be obtained annually to support the monitoring process. The TDM Coordinator will obtain data to quantify the hourly in, out, and number of parked vehicles in the garage. This data will help to establish the resulting parking demand for the enrollment at that time.

Should additional data such as bicycle parking counts or other TDM tracking efforts be needed to support the monitoring effort, additional data will be collected. This might include the following data needs:

- Should bicycle parking utilization counts be needed to support the monitoring process, the number of bicycles parked on campus will be tracked. This data will be reviewed for trends in

bicycle usage over time to determine if bicycle parking is adequate and meets the needs of the bicyclists.

› The TDM Coordinator will work with Metro to track the transit usage of commuters via the pass program implemented. The data for the same time period as outlined above in the surveys will be obtained and reviewed.

The results of monitoring effort will be reported to the City of Portland on an annual basis by May 15th using the standard reporting tools provided by the city.

6. ENVIRONMENTAL QUALITY STANDARDS (14.6.2)

Under pre-development conditions, the Site is approximately 70% impervious with approximately 9 acres of building roofs, parking areas, and loading dock space. At the time of this submission, IDEALS completed a permitted demolition of existing buildings whose footprints have been temporarily stabilized until construction commences as a result of Site Plan approval. Minimal shoreline buffer is present at the Site, with pavement extending right up to the armored embankment along much of the shoreline. Low areas on the Site are only 1-foot above Highest Astronomical Tide.

In recognition of existing vulnerabilities and future sea level rise, resiliency will be key to the campus. The redevelopment will raise interior site grades, soften landscapes to reduce impervious area, and incorporate infrastructure improvements to create a flood resilient landscape. Compliance with the City of Portland's Land Use Code Section 14.6.2 Environmental Quality Standards is described in the following sections.

6.1 Preservation of Significant Natural Features

Immediately adjacent to this highly developed Site are natural resource areas including: an estuarine intertidal emergent marsh located east of the Site near the rail corridor; coastal wetlands for all areas below highest annual tide; tidal waterfowl and wading bird habitat, and blue mussel habitat. A wetland delineation investigation, including a functions & values assessment was conducted by scientists at FB Environmental in June of 2023, and is summarized in the report attached to this section. Portions of the Site are delineated as Special Flood Hazard Areas according to FEMA's Flood Insurance Rate Map (FIRM).

The attached Official Species List identifies the northern long-eared bat (endangered species), roseate tern (endangered species) and monarch butterfly (candidate 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 and the fall. Tree clearing will be conducted between August and May to avoid impacts to long-ear bats. Applicable permitted tree clearing dates for the project will be confirmed with regulatory agencies during final design. It is not anticipated that the proposed development will have a negative impact on the northern long-eared bat, roseate tern, or monarch butterfly.

6.2 Landscape Preservation

Please refer to Section 3.3.7. While the areas adjacent to the Site contain significant natural features as described above, the area within property lines of the campus has been highly developed throughout its history. As such no significant vegetation or natural resources exist on the Site that will be preserved in the landscape design. Rather the focus of the implementation will be on the region's ecology, geology, and habitats.

6.3 Site Landscaping & Buffers

The project landscaping complies with the City of Portland Technical Manual 14.6.2 C with the frequency and size of plantings adjacent to property lines. In addition, a vegetated roof is proposed on the west wing of the Learning, Research, and Collaboration Building. Loading, servicing areas, trash and recycling areas are screened from view of public sidewalks, streets, and adjacent properties. Surface parking lots likewise

comply with the provisions of this section with the use of landscape islands. Please refer to Section 3.3.7 for additional site landscaping information.

6.4 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, as well as the MaineDEP Chapter 500 Stormwater Standards associated with Site Location of Development Act Permit requirements. The Stormwater Management Plan included with this application demonstrates that the proposed development meets the applicable standards.

For a Site that had previously seen no stormwater quality or quantity treatment or management other than some limited collection systems, the proposed stormwater management system will reduce the impact of stormwater on surrounding resources. The proposed stormwater management system has been designed to adequately capture, convey, and treat stormwater runoff, as demonstrated in the Stormwater Management Report uploaded under separate cover. The project will not result in the flooding of adjacent lots or City property.

Additionally, 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. Erosion and sediment control measures are described in the attached Stormwater Management Plan and detailed in the drawings.

6.5 Section Attachments

- Wetland Delineation Report
- Official Species List

6.6 Attachments Provided as Separate Files

The following materials referenced by this section of the report have been uploaded under separate cover for review.

- Stormwater Management Report

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Denise Cameron
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Woodard & Curran
41 Hutchins Drive
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June 27, 2023

Subject: Roux Institute – Wetland Delineation

Dear Denise,

As requested by Woodard & Curran, FB Environmental Associates (FBE) delineated wetlands and watercourses and conducted a wetland functions and values assessment at a site in Portland, Maine. The site is intended to be the permanent home of the Roux Institute, a graduate education and research facility, under the Initiative for Digital Engineering & Life Sciences (IDEALS). The specific Survey Area consists of a 14-acre parcel situated in Portland's East End at the mouth of Back Cove. The attached map depicts the location of the parcel, formerly known as the B&M property.

Fieldwork was conducted on 6 June 2023, by FBE's Ecological Services Division Lead and Senior Wetland Scientist Kevin Ryan and Wetland Scientist Sarah Large. Wetlands were identified and delineated in accordance with the 1987 US Army Corps of Engineers (USACE) Wetland Delineation Manual[1] using the methods described in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0.[2] Copies of completed wetland determination data forms are included with this report. All wetlands and watercourses were classified using the US Fish and Wildlife Service (USFWS) Classification of Wetlands and Deepwater Habitats of the United States.[3]

Wetland Delineation Methods

Wetland boundaries are marked in the field using pink flagging emblazoned with the words "WETLAND DELINEATION." Boundaries of wetlands delineated during the field survey are geo-located using a sub-meter accuracy GPS unit (EOS Arrow-100). The collected GPS data are then used to create a wetland delineation map.

In Maine, Wetlands of Special Significance (WoSS) are regulated by the Maine Department of Environmental Protection (DEP) under Chapter 310 of the Maine Natural Resources Protection Act. All coastal wetlands and great ponds (inland bodies of water >10 acres in size) are classified as WoSS. In addition, a freshwater wetland may be considered one of special significance if it: (1) contains a natural community that is critically imperiled or imperiled as defined by the Maine Natural Areas Program; (2) contains significant wildlife habitat; (3) is located within 250 feet of a coastal wetland; (4) is located within 250 feet of a great pond; (5) contains at least 20,000 square feet of aquatic vegetation, emergent marsh vegetation[4], or open water; (6) is inundated with floodwater during a 100-year flood event based on flood insurance

[1] Environmental Laboratory. (1987). Corps of Engineers Wetlands Delineation Manual. Wetlands Research Program Technical Report Y-87-1. Vicksburg, MS: US Army Engineer Waterways Experiment Station.
[2] U.S. Army Corps of Engineers. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, C. V. Noble, and J. F. Berkowitz. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
[3] Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. *Classification of wetlands and deepwater habitats of the United States*. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. 131pp.
[4] Cowardin et al. [1979] defines emergent hydrophyte (i.e., emergent marsh vegetation) as "…rooted herbaceous angiosperms, ferns, and fern allies that grow in wet soil, stand erect during most or all of the growing season, and may be periodically to permanently flooded at the base, but do not tolerate prolonged inundation of the entire plant").

maps; (7) contains peatlands; or (8) is located within 25 feet of a river, stream, or brook. The Survey Area was assessed for WoSS.

Wetland Functions and Values Assessment Methods

FBE conducted the wetland functional assessment pursuant to the approach described by the Army Corps Highway Methodology Workbook Supplement: Wetland Functions and Values (US ACOE, 1995). In this "Descriptive Approach" to function assessment, prior to determining what functions and values are principal and why, evaluators first determine if particular functions and values are present and then if they are "principal". Functions and values are considered "principal" if they are an important physical component of a wetland ecosystem (function only), and/or are considered of special value to society, from a local, regional, and/or national perspective. When making determinations regarding a wetland, evaluators are encouraged to determine whether the wetland has the potential to serve these functions and values.

Functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society and result from both living and non-living components of a specific wetland resource. These include all processes necessary for the self-maintenance of the wetland ecosystem, such as primary productivity and nutrient cycling, among others. Therefore, functions relate to the ecological significance of wetland properties without regard to subjective human values.

Values are benefits that derive from one or more functions and the physical characteristics associated with a wetland. Most wetlands have corresponding societal values. The value of a particular wetland function, or combination of functions, is based on human judgment of the worth, merit, quality, or importance attributed to those functions.

The 13 functions and values associated with a wetland functional assessment are described below:

1. *Groundwater Recharge/Discharge*: The potential for the wetland to serve as a groundwater recharge and/or discharge area. This function refers to the fundamental interaction between wetlands and aquifers, regardless of the size or importance of either.
2. *Floodflow Alteration (Storage & Desynchronization)*: The effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events and the gradual release of floodwaters. This function adds to the stability of the wetland ecosystem or its buffering characteristics and provides social or economic value relative to erosion and/or flood prone areas.
3. *Fish and Shellfish Habitat*: The effectiveness of seasonal or permanent watercourses associated with the wetland to provide fish and shellfish habitat.
4. *Sediment/Toxicant/Pathogen Retention*: The ability of the wetland to reduce or prevent degradation of water quality. This function relates to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens in runoff water from surrounding uplands, or upstream erosive wetland areas.
5. *Nutrient Removal/Retention/Transformation*: The ability of the wetland to act as a trap for nutrients in runoff water from surrounding uplands or contiguous wetlands and the ability of the wetland to process these nutrients into other forms or trophic levels. One aspect of this function is to prevent ill effects of nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries.
6. *Production Export*: The effectiveness of the wetland to produce food or usable products for man or other living organisms.
7. *Sediment/Shoreline Stabilization*: The effectiveness of the wetland in stabilizing stream banks and shorelines against erosion.
8. *Wildlife Habitat*: The effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and wetland edges. Both resident and migrating species are considered.

9. *Recreation*: The suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities.
10. *Educational/Scientific Value*: The suitability of the wetland as a site for an "outdoor classroom," or as a location for scientific study or research.
11. *Uniqueness/Heritage*: The effectiveness of the wetland or its associated waterbodies to provide certain unique values, including archaeological sites, critical habitat for endangered species, its overall health and appearance, its role in the ecological system of the area, or its relative importance as a typical wetland class for the geographic location.
12. *Visual Quality/Aesthetics*: The visual and aesthetic quality or usefulness of the wetland.
13. *Endangered Species Habitat*: The suitability of the wetland to support threatened or endangered species.

Site Description

The site is composed of approximately 14-acres of previously developed land bounded by Casco Bay to the south and east, Portland's Back Cove to the west, I-295 to the northwest, and the former Grand Trunk Railway rail grade to the northeast. The site was home to the B&M Baked Beans plant that operated at the site from 1913 to circa 2022. The factory buildings occupy roughly half of the parcel[5], with parking lots accounting for an additional third. The remaining sixth of the property is composed of manicured lawn, trees and shrubs, and a small linear wetland running north-south along the eastern property boundary with the railroad grade.

Soils at the site consist primarily of urban fill. An elevated plateau-like area is present between the factory buildings and the wetland complex/ravine to the east.

Wetlands and Watercourses

FBE identified one contiguous wetland within the Survey Area which contains several wetland classes. Areas immediately adjacent to the site are regularly flooded estuarine intertidal wetlands with a predominantly mud substrate (E2US3N). Areas mapped beyond this wetland type are classified as estuarine subtidal (E1UBL) as the substrate remains inundated at low tide.

The wetland complex at the site is coastal and therefore meets the criteria to be deemed Wetland of Special Significance by DEP.

Wetland A - E2US3N Section

The western end of the shoreline at the site, extending east to the pier, meets the classification of a regularly flooded estuarine intertidal unconsolidated shore wetland with a mud substrate (E2US3N). The area is a mudflat that is bordered by riprap on all sides. The wetland has been altered by the development present on and adjacent to the site. Rockweed (*Ascophyllum nodosum*), a seaweed common to sheltered shores and coves, is present within the wetland attached to riprap and on rocks within the mudflat.

Wetland A – E2US1N Section

East of the pier, the characteristics of Wetland A differ in terms of substrate and meets the classification of a regularly flooded estuarine intertidal unconsolidated shore wetland with a cobble-gravel substrate (E2US1N). The predominantly cobble-gravel substrate of this section of the wetland is strewn with old, weathered bricks and other historic construction debris. The land area immediately east of the pier is bounded by a stone retaining wall; beyond it to the east, the shoreline is lined with rocks of various sizes ranging from pebbles to boulders.

Wetland A – E2EM1N Section

The channelized section of Wetland A on the eastern boundary of the property is an estuarine intertidal emergent marsh system with persistent vegetation (E2EM1N) situated in a ravine that is regularly flooded. This portion of the wetland has a variety of native and nonnative invasive shrubs growing along the banks. Native shrubs observed

[5] The buildings were in the process of being demolished during the course of the field investigation.

in proximity to the wetland included willows (*Salix* sp.), staghorn sumac (*Rhus hirta*), and cherry trees (*Prunus* sp.). Nonnative plants observed include black locust trees (*Robina pseudoacacia*) and cultivated apple trees (*Malus pumila*). Non-native, invasive plants observed consisted of Morrow's honeysuckle (*Lonicera morrowii*), Japanese knotweed (*Fallopia japonica*), and multiflora rosa (*Rosa multiflora*).

At the USACE plot within this section of the wetland, smooth cordgrass (*Spartina alterniflora*) is the dominant vegetation with Carolina sea-lavender (*Limonium carolinianum*) and common glasswort (*Salicornia depressa*) also present. Soil met the criteria for hydric soil indicators A11 – Depleted Below Dark Surface and F3 Depleted Matrix as the soil profile consisted of a dark surface layer of silty clay loam underlain by a depleted clay with prominent redoximorphic concentrations. Observed primary indicators of hydrology consisted of A1 – Surface Water, A2 – High Water Table, A3 – Saturation, and B9 – Water-Stained Leaves. Completed USACE Wetland Determination Data forms are attached to this letter.

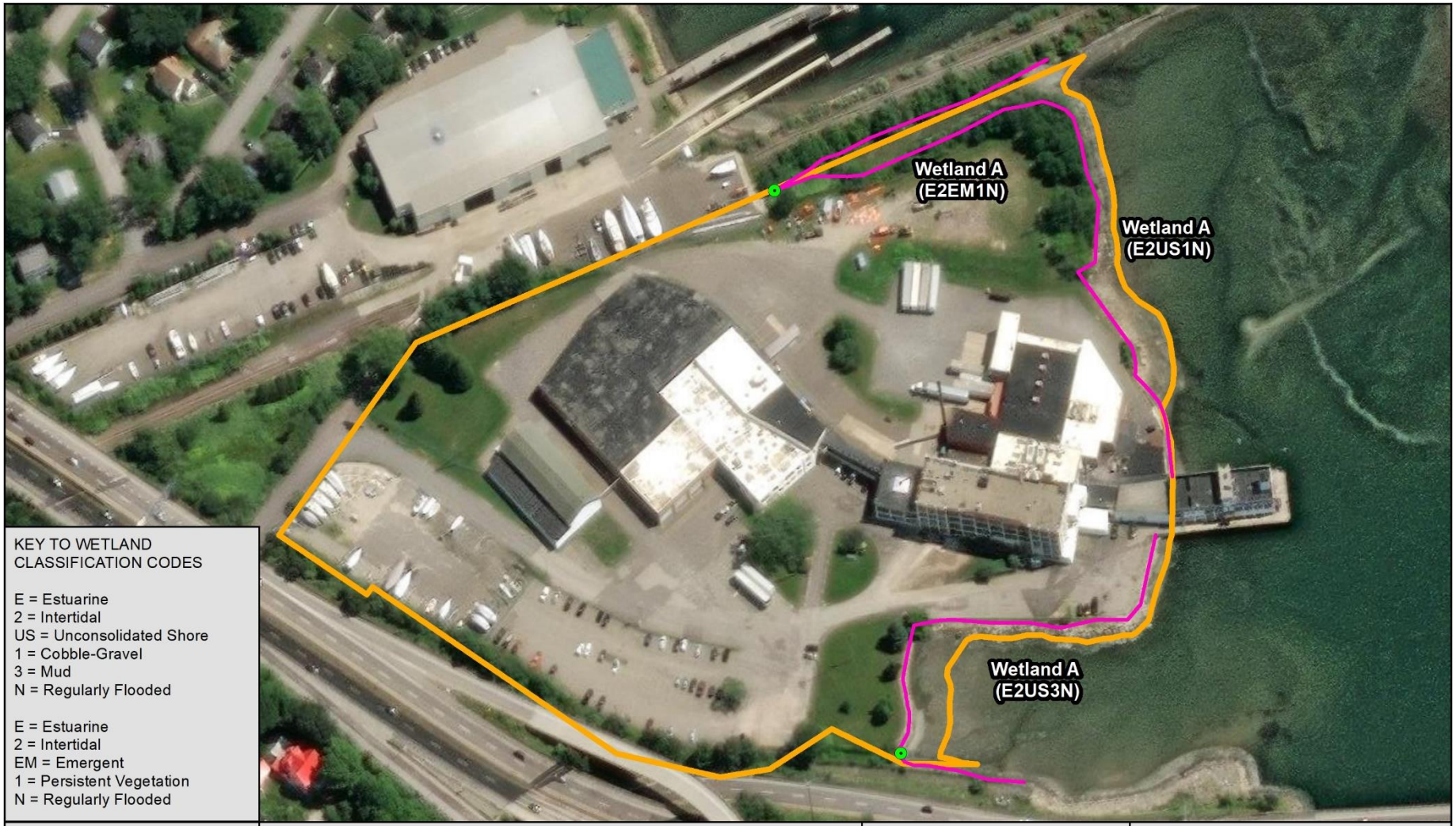
Functions and Values

Principal functions of Wetland A are Fish and Shellfish Habitat, Production Export, Wildlife Habitat, and Uniqueness/Heritage. Other functions and values that the wetland provides consist of Floodflow Alteration, Sediment/Toxicant Retention, Nutrient Removal, Sediment/Shoreline Stabilization, Recreation, Educational/Scientific Value, and Visual Quality/Aesthetics. A completed USACE Function and Value Evaluation Form is attached to this letter.

Thank you for the opportunity to assist Woodard & Curran with this project. Please do not hesitate to contact me if you have questions or need additional information.

Regards,

Kevin Ryan
Ecological Services Division Lead
FB Environmental Associates

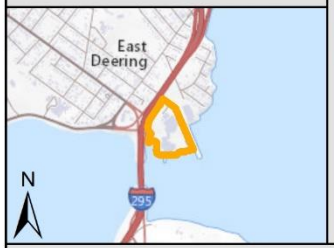


KEY TO WETLAND CLASSIFICATION CODES

E = Estuarine
2 = Intertidal
US = Unconsolidated Shore
1 = Cobble-Gravel
3 = Mud
N = Regularly Flooded

E = Estuarine
2 = Intertidal
EM = Emergent
1 = Persistent Vegetation
N = Regularly Flooded

LOCUS MAP



Survey Area
Wetland Boundary
Culvert

N E S W

FB environmental

0 100 200 Feet

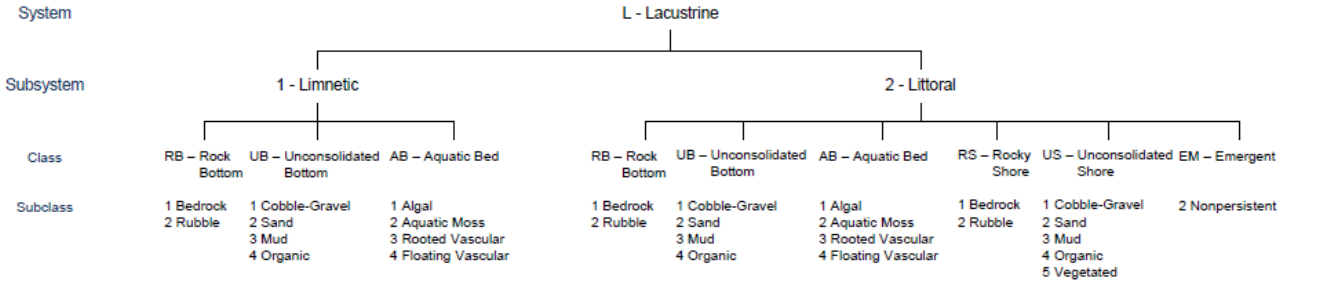
Initiative for Digital Engineering & Life Sciences
Roux Institute
Portland, Maine

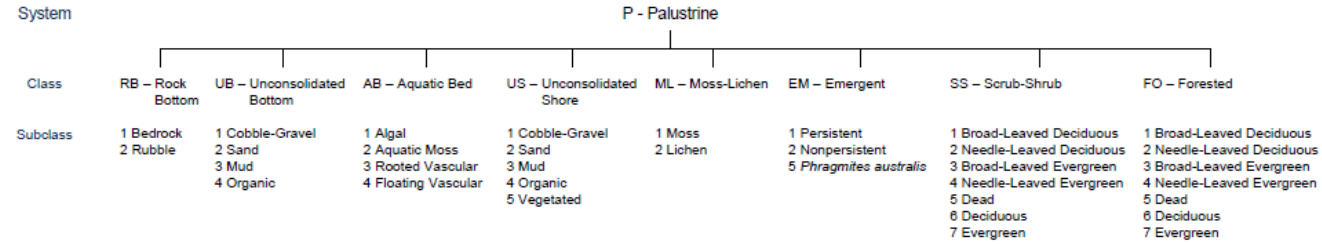
Data Sources: Maine Geolibrary, ESRI, FBE
Coordinate System: NAD 1983 UTM Zone 19
Map created by K. Ryan on June 22, 2023

Notes: Wetlands were delineated by Kevin Ryan and Sarah Large in accordance with the 1987 US Army Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, v2.0. January 2012. Wetlands were classified using the Classification of Wetlands and Deepwater Habitats of the United States (USFWS, 1979).

Cowardin Wetland Classification System

WETLANDS AND DEEPWATER HABITATS CLASSIFICATION



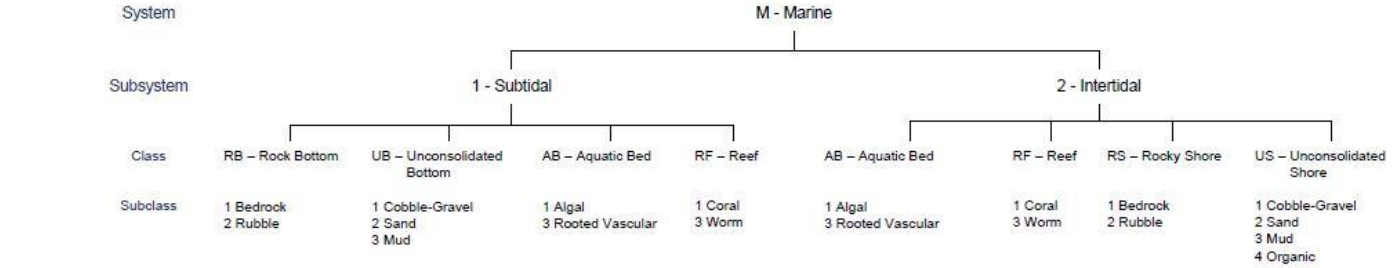


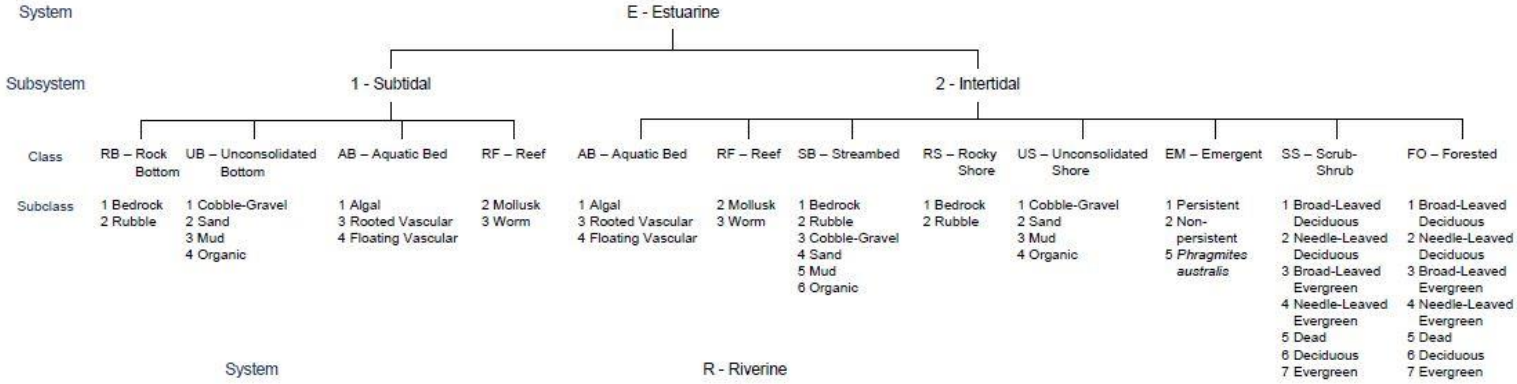
MODIFIERS

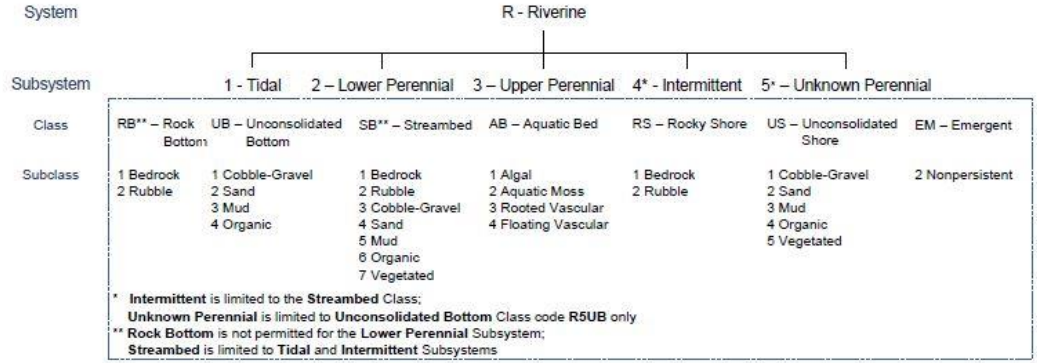
In order to more adequately describe the wetland and deepwater habitats, one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

Water Regime			Special Modifiers	Water Chemistry			Soil
Nontidal	**Saltwater Tidal**	**Freshwater Tidal**		**Coastal Halinity**	**Inland Salinity**	**pH Modifiers for all Fresh Water**	
A Temporarily Flooded	L Subtidal	S Temporarily Flooded-Tidal	b Beaver	1 Hyperhaline	7 Hypersaline	a Acid	g Organic
B Saturated	M Irregularly Exposed	R Seasonally Flooded-Tidal	d Partly Drained/Ditched	2 Euhaline	8 Eusaline	t Circumneutral	n Mineral
C Seasonally Flooded	N Regularly Flooded	T Semipermanently Flooded-Tidal	f Farmed	3 Mixohaline (Brackish)	9 Mixosaline	i Alkaline	
E Seasonally Flooded/ Saturated	P Irregularly Flooded	V Permanently Flooded-Tidal	h Diked/Impounded	4 Polyhaline	0 Fresh		
F Semipermanently Flooded			r Artificial	5 Mesohaline			
G Intermittently Exposed			s Spoil	6 Oligohaline			
H Permanently Flooded			x Excavated	0 Fresh			
J Intermittently Flooded							
K Artificially Flooded							

WETLANDS AND DEEPWATER HABITATS CLASSIFICATION







Site Photographs



Photo 1. View south from the north end of Wetland A.



Photo 2. View north from the western boundary of Wetland A, towards the developed/manicured area.



Photo 3. The current pier acts as a dividing line between the muddy and cobble-gravel substrate sections of Wetland A.



Photo 4. Wetland A north of the pier has a cobble-gravel substrate strewn with old bricks.



Photo 5. View north of the emergent marsh section of Wetland A.



Photo 6. View south from the emergent marsh section of Wetland A.



Photo 7. Several small culverts drain to the west end of Wetland A.



Photo 8. View north of the emergent portion of Wetland A upon becoming inundated during the field investigation.

Completed Wetland Function-Value Evaluation Form

Wetland Function-Value Evaluation Form

Total area of wetland: n/a Human made?: No Is wetland part of a wildlife corridor?: No or a "habitat island"?: No

Adjacent land use: Industrial facility Distance to nearest roadway or other development: Immedeately adjacent

Dominant wetland systems present: Estuarine Contiguous undeveloped buffer zone present: No

Is the wetland a separate hydraulic system?: No If not, where does the wetland lie in the drainage basin?: Low - coastal

How many tributaries contribute to the wetland?: n/a Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D.: Wetland A

Latitude: 43.64235 Longitude: 70.279119

Prepared by: KR & SL Date: 6 June 2023

Wetland Impact:
Type: _____ Area: _____

Evaluation based on:
Office: Yes Field: Yes

Corps manual wetland delineation completed? Y: x N: _____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N			
Floodflow Alteration	Y	3,4,5,9,11		
Fish and Shellfish Habitat	Y	1,3,4	Y	Wetland is a coastal mudflat.
Sediment/Toxicant Retention	Y	1,2,4,7,8,9		
Nutrient Removal	Y	2,4,5,6,7		
Production Export	Y	1,4,6	Y	
Sediment/Shoreline Stabilization	Y	1,3,5,10,11		
Wildlife Habitat	Y	8,16,21	Y	Observed waterfowl and fish using wetland.
Recreation	Y	2,5,12		
Educational/Scientific Value	Y	2,5,14		
Uniqueness/Heritage	Y	1,13,14,17,19,20	Y	
Visual Quality/Aesthetics	Y	2,6,8,11,12		
ES Endangered Species Habitat				Unknown.
Other				

Notes:

* Refer to backup list of numbered considerations.

Completed Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: IDEALS - Roux Institute City/County: Portland/Cumberland Sampling Date: 6 June 23

Applicant/Owner: Woodard & Curran State: ME Sampling Point: A-1 (wet)

Investigator(s): Kevin Ryan and Sarah Large Section, Township, Range:

Landform (hillside, terrace, etc.): Coast Local relief (concave, convex, none): Concave Slope %: 1

Subregion (LRR or MLRA): LRR R Lat: Long: Datum:

Soil Map Unit Name: Cut and Fill NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	If yes, optional Wetland Site ID:
Wetland Hydrology Present?	Yes X	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 4
Water Table Present?	Yes X	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Plot becoming inundated by tide at time of data collection.

US Army Corps of Engineers Northcentral and Northeast Region – Version 2.0

VEGETATION – Use scientific names of plants.

Sampling Point: A-1 (wet)

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5)			
1. *Spartina alterniflora*	50	Yes	OBL
2. *Limonium carolinianum*	10	No	OBL
3. *Salicornia depressa*	5	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	65 =Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	65	x 1 =	65
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	65 (A)		65 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** __

Remarks: (Include photo numbers here or on a separate sheet.)

US Army Corps of Engineers

Northcentral and Northeast Region – Version 2.0

SOIL Sampling Point: A-1 (wet)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 2.5/1	100					Loamy/Clayey	Silty clay loam
4-8	2.5Y 4/1	75	7.5YR 5/6	25	C	M	Loamy/Clayey	Prominent redox concentrations
8-16	2.5Y 4/1	60	7.5YR 5/6	40	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

US Army Corps of Engineers Northcentral and Northeast Region – Version 2.0

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: IDEALS - Roux Institute City/County: Portland/Cumberland Sampling Date: 6 June 23

Applicant/Owner: Woodard & Curran State: ME Sampling Point: A-1 (up)

Investigator(s): Kevin Ryan and Sarah Large Section, Township, Range:

Landform (hillside, terrace, etc.): Coast Local relief (concave, convex, none): Concave Slope %: 1

Subregion (LRR or MLRA): LRR R Lat: Long: Datum:

Soil Map Unit Name: Cut and Fill NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	If yes, optional Wetland Site ID:
Wetland Hydrology Present?	Yes ____	No X	

Remarks: (Explain alternative procedures here or in a separate report.)
Plot is in manucured lawn just west of Wetland A

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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VEGETATION – Use scientific names of plants.

Sampling Point: A-1 (up)

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Picea abies*	10	Yes	UPL
2. *Thuja occidentalis*	10	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	20	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *None*			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Trifolium repens*	30	Yes	FACU
2. *Achillea millefolium*	30	Yes	FACU
3. *Poa sp.*	30	Yes	
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	60	x 4 =	240
UPL species	10	x 5 =	50
Column Totals:	80 (A)		310 (B)

Prevalence Index = B/A = 3.88

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)
Plot is on manicured lawn.

US Army Corps of Engineers

Northcentral and Northeast Region – Version 2.0

SOIL Sampling Point A-1 (up)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	7.5YR 3/2	100					Loamy/Clayey	Sandy Loam
20-22	7.5YR 4/4	100					Loamy/Clayey	Sandy Loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

US Army Corps of Engineers Northcentral and Northeast Region – Version 2.0

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

In Reply Refer To:
Project Code: 2023-0113655
Project Name: IDEALS Phase 1

October 30, 2023

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 threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The 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 IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the 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/or 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 and/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:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

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 Code 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
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

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

Project Code: 2023-0113655
Project Name: IDEALS Phase 1
Project Type: Acquisition of Lands
Project Description: Phase 1
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.67886365,-70.25460066402678,14z



Counties: Cumberland County, Maine

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 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* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered

BIRDS

NAME	STATUS
Roseate Tern *Sterna dougallii dougallii* Population: Northeast U.S. nesting population No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2083	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

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

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

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

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

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

THERE ARE NO BALD AND GOLDEN EAGLES WITHIN THE VICINITY OF YOUR PROJECT AREA.

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

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

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Black Guillemot *Cepphus grylle* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10412	Breeds May 15 to Sep 10
Black Scoter *Melanitta nigra* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10413	Breeds elsewhere
Common Eider *Somateria mollissima* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10457	Breeds Jun 1 to Sep 30
Common Loon *gavia immer* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/4464	Breeds Apr 15 to Oct 31
Great Shearwater *Puffinus gravis* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/9634	Breeds elsewhere
Long-tailed Duck *Clangula hyemalis* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/7238	Breeds elsewhere
Razorbill *Alca torda* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10461	Breeds Jun 15 to Sep 10
Red Phalarope *Phalaropus fulicarius* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10469	Breeds elsewhere

NAME	BREEDING SEASON
Red-breasted Merganser *Mergus serrator* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10693	Breeds elsewhere
Red-throated Loon *Gavia stellata* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/9589	Breeds elsewhere
Ring-billed Gull *Larus delawarensis* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10468	Breeds elsewhere
Roseate Tern *Sterna dougallii* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10661	Breeds May 10 to Aug 31
Surf Scoter *Melanitta perspicillata* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10463	Breeds elsewhere
Thick-billed Murre *Uria lomvia* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10700	Breeds Apr 15 to Aug 15
White-winged Scoter *Melanitta fusca* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10462	Breeds elsewhere
Wilson's Storm-petrel *Oceanites oceanicus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10416	Breeds elsewhere

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read the supplemental information and specifically the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

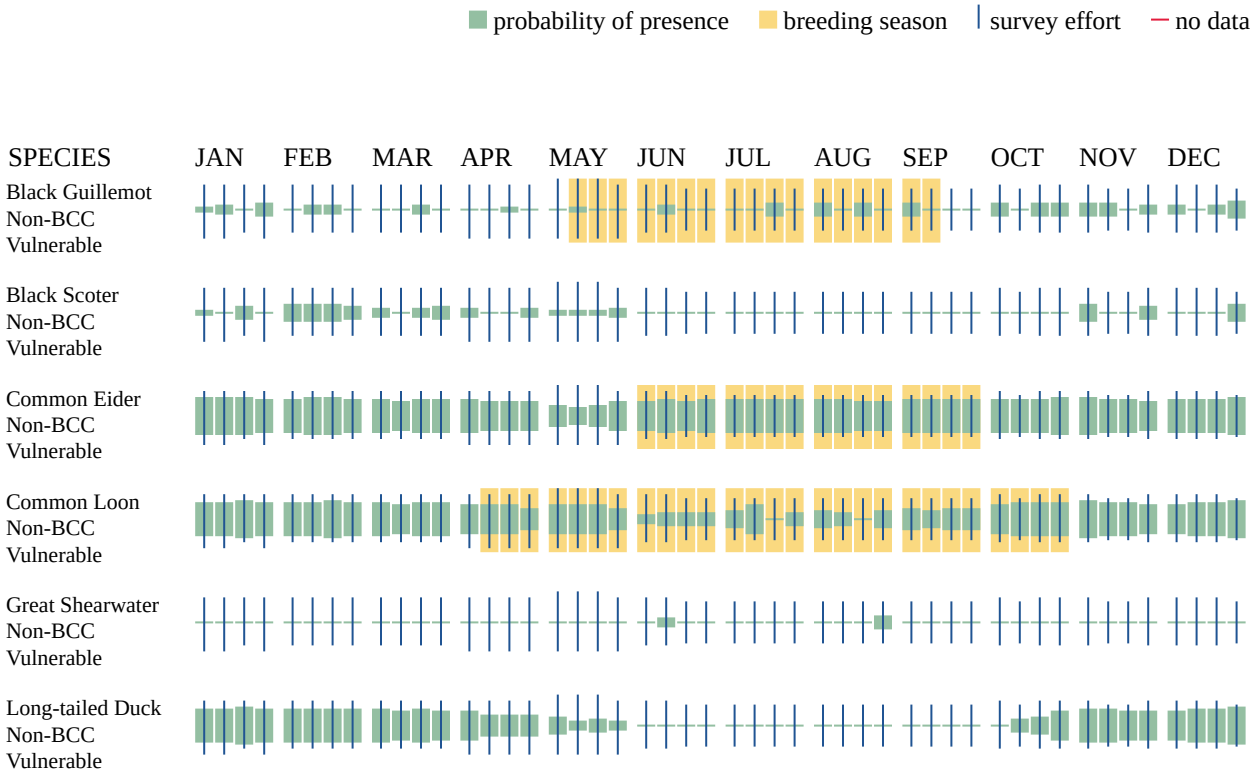
Probability of Presence (■)

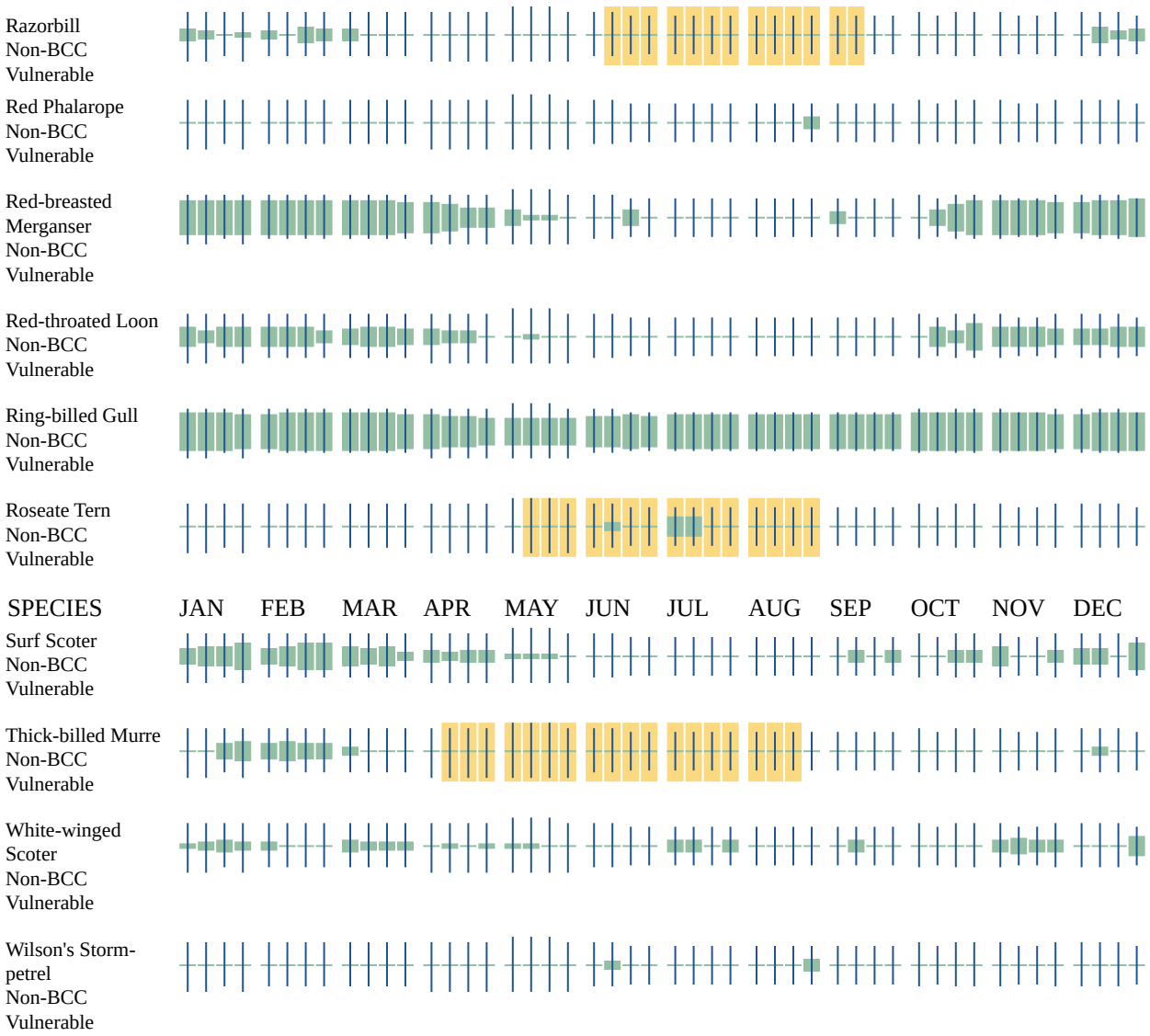
Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.





Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

WETLANDS

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

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

ESTUARINE AND MARINE WETLAND

- E2US2P
- E2US3N

ESTUARINE AND MARINE DEEPWATER

- E1UBL

IPAC USER CONTACT INFORMATION

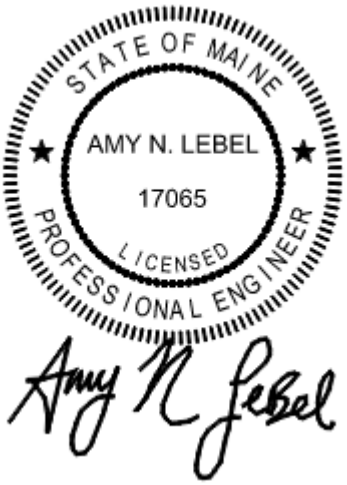
Agency: Private Entity
Name: Julianna Monts
Address: 41 Hutchins Drive
City: Portland
State: ME
Zip: 01402
Email jmonts@woodardcurran.com
Phone: 9175753387

Att. L

ROUX INSTITUTE AT NORTHEASTERN UNVERSITY

Stormwater Management Plan

1 Bean Pot Circle
Portland, ME



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Portland, ME 04101
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woodardcurran.com

Prepared for
Initiative for Digital Engineering and Life Sciences (IDEALS)

October 2023

TABLE OF CONTENTS

SECTION		PAGE NO.
1.	**INTRODUCTION & BACKGROUND**	**1-1**
2.	**EXISTING CONDITIONS**	**2-1**
3.	**PROPOSED DEVELOPMENT**	**3-1**
4.	**STORMWATER STANDARDS**	**4-1**
4.1	Basic Standard (Soil Erosion & Sediment Control)	4-1
4.2	Flooding Standard (Stormwater Quantity)	4-1
4.3	General & Redevelopment Standards (Stormwater Quality)	4-2
4.3.1	Maine DEP Redevelopment Standards	4-2
4.3.2	City of Portland Redevelopment Standards	4-2
4.3.3	Proposed Treatment Systems	4-2
5.	**INSPECTION & MAINTENANCE REQUIREMENTS**	**5-1**

APPENDICES

Appendix A: Stormwater Inspection & Maintenance Plan
Appendix B: Stormwater Quality Calculations
Appendix C: Figures

1. INTRODUCTION & BACKGROUND

This narrative report is in support of a Major Site Plan Application and Site Location of Development (SLOD) Permit Application on behalf of Northeastern University (Applicant) and their agent, Initiative for Digital Engineering and Life Sciences (IDEALS), for development of the Roux Institute at Northeastern University campus located at 1 Bean Pot Circle in Portland, Maine (the Site). This Stormwater Management Plan (SWMP) describes existing site conditions, the proposed development, compliance with applicable stormwater standards, and inspection and maintenance requirements for the proposed stormwater system for Phase 1.

Phase 1 includes construction of a Learning, Research, and Collaboration Building, renovation of the Bean Building to create business incubator space, construction of a parking garage, development of a childcare facility, replacement of the pier, development of a coastal path, and other site improvements. The proposed Phase 1 project is designed with consideration to future development, with the interior-most and waterfront spaces being developed first to reduce impacts of construction of future phases. Likewise, the stormwater management system has been designed to ensure stormwater standards are met for the development during each phase, with consideration and capacity for full build-out of the Site to minimize future construction impacts.

The project is subject to stormwater management standards through the requirements of both the City of Portland Site Plan and the Maine DEP Site Location of Development permit applications. The following report demonstrates how the development of the Site meets the stormwater standards outlined in Section 5 of the City of Portland's Technical Manual and in the Maine DEP's Chapter 500.

2. EXISTING CONDITIONS

The Site is located within Portland's East Deering neighborhood, at the end of Sherwood Street, adjacent to Maine Yacht Services and near a residential area of single and multi-family homes (three-story apartment buildings) and a commercial node featuring restaurants, bars, automobile mechanics, and offices. While proximate to these areas, the Site is remarkably buffered; I-295 to the west, state-owned vacant parcels to the north, a disused rail corridor and marine business to the east, and Casco Bay to the south collectively surround the property.

The Site includes approximately 13 acres above mean higher high water (MHHW) line as well as an adjacent 11 acres of submerged lands. A survey of the Site was completed by VHB, Inc. (dated June 30, 2021 and July 17, 2023). Approximately 9 acres of land above the mean higher high water line are impervious (paved areas, building roofs, foundations, etc.). The remaining 4 acres of permeable area include lawn and approximately half an acre of vegetated non-lawn area adjacent to the rail corridor abutting the site to the east. No stormwater treatment systems exist on the Site.

The Site was occupied by residences and a lobster cannery prior to 1913, when Burnham & Morrill (B&M) relocated its food manufacturing operations to the Site from Franklin Street. Shortly thereafter, the flagship Cannery Building (Bean Building) was constructed, as well as the adjacent codfish building on the pier. The site was further improved with buildings and parking to support operations. Due to its industrial use, the site is surrounded by security fencing, and the interior and waterfront have historically been inaccessible to the public. Canning operations ceased in 2021.

On May 23, 2023, IDEALS received a demolition permit from the City, and commenced demolition of all existing buildings on the site, retaining only the Bean Building and the Codfish Building. The demolished building areas remain stabilized with perimeter erosion control measures, and for the purposes of evaluating the Site for stormwater permitting, these areas have been considered as impervious existing roof.

Topography of the Site generally slopes from north to south toward Casco Bay. Runoff from the Site drains via sheet flow in a southerly direction to a series of catch basins that ultimately discharge to Casco Bay. The highest elevations are near Sherwood Street, at elevation 28 +/-. The lowest grades are near the loading dock at the B&M Bean Building, at elevation 8.5 +/-. These low areas are only 1-foot above Highest Astronomical Tide.

3. PROPOSED DEVELOPMENT

The proposed development of Phase 1 and reconstruction of Sherwood Street will result in approximately 14.5-acres of disturbance and approximately 7.3-acres of impervious area, for a net decrease in impervious area of approximately 2.6-acres. Proposed work includes:

- Construction of the Learning, Research, and Collaboration Building;
- Renovation of the Bean Building;
- Construction of a parking garage;
- Development of a childcare facility;
- Replacement of the pier;
- Development of a coastal path; and
- Landscaping, utility, and site improvements.

The proposed drainage conveyance system in Phase 1 is comprised of a series of drainage swales, catch basins, area drains, field inlets, trench drains, hydrodynamic separators, outlet control structures, and drainage manholes, which ultimately discharge to Casco Bay via three outfalls. Stormwater treatment for the Site in Phase 1 is provided via bioretention basins and subsurface sand filters. The proposed stormwater management systems are discussed in further detail in the following sections.

Sherwood Street will also be reconstructed as part of this project from the intersection of Veranda Street, underneath the Interstate 295 overpass bridge and into the Site. The design of Sherwood Street from Veranda Street through the existing Interstate 295 overpass is shown on the roadway design drawings by VHB and the design beyond the overpass into the Site is shown on the design drawings by Woodard & Curran. Drainage from Sherwood Street is managed separately from the rest of the Site. Woodard & Curran met with City of Portland Public Works staff to discuss Sherwood Street and will be working with them to resolve how best to connect stormwater infrastructure within the reconstructed street.

The reconstruction of Sherwood Street results in an increase in impervious area of approximately 0.2 acres in the Sherwood Street right-of-way; therefore, Sherwood Street has been included in the stormwater treatment calculations for the Site. Limited space is available for treatment of stormwater in the Sherwood Street right-of-way. Woodard & Curran confirmed with City of Portland Public Works that Sherwood Street redeveloped area may be factored into on-site stormwater treatment calculations.

4. STORMWATER STANDARDS

The project is subject to the MaineDEP Chapter 500 and City of Portland Technical Manual Section 5 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.

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", latest edition. 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 5 of this Report.

4.2 Flooding Standard (Stormwater Quantity)

Runoff from the proposed project will primarily discharge to the adjacent Casco Bay, which is a tidal waterbody, via either sheet flow or the on-site storm drain system. In accordance with Section 4.F(3) of the MaineDEP Chapter 500 Stormwater Standards, a project is eligible for a waiver from the Flooding Standard if it discharges to a coastal wetland or a major river segment. As noted in the description of the proposed development, the only portion of the Site that will not discharge directly to Casco Bay is the drainage from within Sherwood Street. We respectfully request a waiver from the Flooding Standard for the campus development.

4.3 General & Redevelopment Standards (Stormwater Quality)

The proposed project is subject to the redevelopment standards for stormwater quality from both the MaineDEP and the City of Portland. Calculations demonstrating compliance with stormwater quality standards are provided in Appendix B. A figure showing the area of redevelopment is included in Appendix C of this Report.

4.3.1 Maine DEP Redevelopment Standards

Calculations have been prepared in accordance with Section 4.C(2)(d) of the MaineDEP Chapter 500 Stormwater Standards to determine how much treatment is required for the proposed redevelopment project. The project has been evaluated as a "Site" project as it is required to obtain a Site Location of Development Permit. Based on the impact analysis calculations provided in Appendix B of this Report, it has been determined that the proposed project is required to provide treatment for 50% of the total redevelopment area. Figures showing existing and proposed pollutant ranking areas are provided in Appendix C. With the proposed stormwater management system, greater than 50% of the redevelopment area will be captured and treated. Runoff from proposed driveways, parking areas, building roofs, and interior impervious plazas was prioritized for treatment; figures showing redevelopment and treatment areas is provided in Appendix C.

4.3.2 City of Portland Redevelopment Standards

For redevelopment sites, per Section 5 of the City of Portland's Technical Manual, a minimum of 50% of the non-roof redeveloped impervious surface on a site must receive stormwater treatment. The calculations included in Appendix B show that greater than 50% of the non-roof redeveloped impervious surface on the Site will be treated by the proposed stormwater systems.

4.3.3 Proposed Treatment Systems

As previously described, stormwater systems will consist of bioretention basins and subsurface sand filters. The proposed stormwater systems have been designed based on Volume III of the DEP Stormwater BMP Manual; calculations demonstrating compliance with the BMP design requirements are provided in Appendix B and design details are provided on the drawings.

Three bioretention basins are proposed to treat stormwater from interior sidewalks, plaza and landscaped areas. Outlet control structures and emergency spillways are provided to manage runoff beyond the 1-inch water quality storm event.

The subsurface sand filters are comprised of proprietary R-Tank modules over sand filters. The R-Tank system has been designed to detain the water quality volume for the upgradient area. Diversion structures are provided upgradient of proposed subsurface sand filters to manage runoff beyond the 1-inch water quality storm event. We are coordinating with the manufacturer on the proposed subsurface sand filter design; a letter that demonstrates manufacturer review and approval of the design can be provided upon request.

The proposed design includes multiple best management practices to reduce sediment loading upgradient of the stormwater filtration systems, including deep sump catch basins, offline catch basin drainage design, sediment forebay, grass swales, hydrodynamic separators, and pretreatment rows. The sediment pretreatment devices have been sized in accordance with the Maine DEP BMP Manual for non-roof impervious drainage area. Sizing calculations are provided in Appendix B.

5. 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 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. A Stormwater Maintenance Agreement will also be provided and will be signed and recorded following approval.

APPENDIX A: STORMWATER INSPECTION & MAINTENANCE PLAN

STORMWATER INSPECTION & MAINTENANCE PLAN

The Roux Institute at Northeastern University Phase 1

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, and manufacturer guidelines; an example page of the BMP Maintenance Log that shall be kept on-site is also attached.

INSPECTION AND MAINTENANCE OF STORMWATER SYSTEMS

Trash, debris, and sediment shall be removed from storm drainage 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. These areas will be kept clean and clear through periodic sweeping and winter plowing as required. Inspections will also ensure pavement markings are repainted as needed to maintain proper traffic circulation. Paved areas will be plowed and sanded as often as necessary to maintain public safety. Periodic sweeping of pavement will reduce the amount of sediment available to enter the stormwater systems, in turn reducing the need to clean the stormwater systems.

Bioretention Basin

The bioretention basins should be inspected after major storms (one-inch storm or greater in 24 hours) in the first year to be sure they are functioning properly. Thereafter, the basins should be inspected at least once every six months to ensure that they are draining within 24 to 48 hours following a one-inch storm or greater. If the system drains too fast, an orifice may need to be added on the underdrain outlet. If ponding exceeds 48 hours, the top of the filter bed must be rototilled to reestablish the soil's filtration capacity. If ponding exceeds 72 hours, the top several inches of the filter shall be replaced with fresh material.

Debris and sediment buildup shall be removed from the basin as needed but at least annually and shall be disposed of in an acceptable manner. Any bare area or erosion rills shall be repaired with new filter media or sandy loam then mulched or seeded. Fertilization of the bioretention basin should be avoided unless absolutely necessary to establish vegetation. Harvesting and pruning of excessive growth will need to be done occasionally. Weeding to control unwanted or invasive plants may also be necessary. Mulch shall be replaced annually or as needed.

Subsurface Sand Filter

The subsurface sand filter should be inspected after every major storm in the first year to be sure it is functioning properly. Thereafter, the filter should be inspected at least once every six months to ensure that it is draining within 24 to 48 hours following a one-inch storm or greater. If the system drains too fast, an orifice may need to be added on the underdrain outlet or, if already present, may need to be modified. The sediment pretreatment systems should be cleaned when necessary. The proprietary subsurface detention

component of the sand filter (R-Tank modules) must be inspected and maintained per the manufacturer's guidelines, which are outlined in the attached guidance document.

Sediment Forebay

Debris and sediment buildup shall be removed from sediment forebays as needed but at least annually and shall be disposed of in an acceptable manner.

Grass Swale

Debris, sediment buildup, and woody vegetation shall be removed from the grass swales as needed but at least annually and shall be disposed of in an acceptable manner.

Hydrodynamic Separator

Hydrodynamic separators must be inspected and maintained per the manufacturer's guidelines. Sediment shall be removed at least annually and when sediment volume exceeds the sediment storage capacity of the device.

STORMWATER INSPECTION CHECKLIST

Inspection by: _____ Date: _____

Stormwater Feature	Condition						Comments
Vegetative cover	no bare spots, no evidence of rill erosion		some bare spots, some rill erosion		large bare areas, extensive erosion		
Drainage channels/swales	no erosion, channels clear		some erosion and siltation		major erosion, channels clogged		
Sediment Forebay	no siltation		some siltation		heavily silted in		
Sediment Forebay	inlet/outlet clear		some debris		completely blocked		
Hydrodynamic Separator*	no siltation		some siltation		heavily silted in		
Hydrodynamic Separator*	inlet/outlet clear		some debris		completely blocked		
Subsurface Drainage System	no siltation		some siltation		heavily silted in		
Subsurface Drainage System	no clogging/flooding		some clogging/flooding		heavy clogging/flooding		
Subsurface Drainage System	outlet free of erosion		some erosion at outlet		outlet heavily eroded		
Subsurface Drainage System	inlet/outlet clear		some debris		completely blocked		
Bioretention Basin	no siltation		some siltation		heavily silted in		
Bioretention Basin	side slopes free of erosion		some erosion on side slopes		side slopes heavily eroded		
Bioretention Basin	inlet free of erosion		some erosion at inlet		inlet heavily eroded		
Bioretention Basin	outlet clear		some debris		completely blocked		
Bioretention Basin	healthy/robust plant growth		plants unhealthy		plants dead or overgrown		
Bioretention Basin	drains in less than 24 hours		drains between 24 and 48 hours		ponding exceeds 48 hours		
Subsurface Sand Filter*	no siltation		some siltation		heavily silted in		
Subsurface Sand Filter*	no clogging/flooding		some clogging/flooding		heavy clogging/flooding		
Subsurface Sand Filter*	inlet/outlet clear		some debris		completely blocked		

**See attached manufacturer's guidelines for system maintenance and inspection.*

Recommended Actions: _____

_____

Actions Completed: _____ Date: _____

STORMWATER MANAGEMENT MAINTENANCE TASKS AND RECOMMENDED SCHEDULE

TASKS	SEDIMENT FOREBAY	HYDRODYNAMIC SEPARATOR	GRASS SWALES	BIORETENTION BASIN	OUTLET CONTROL STRUCTURE	SUBSURFACE SAND FILTER	STORM DRAIN PIPES	SCHEDULE
Inspect for sediment accumulation	X	X	X	X	X	X	X	Spring and Fall
Remove sediment accumulation	X	X	X	X	X	X	X	As needed
Clean debris	X	X	X	X	X	X	X	As needed
Inspect for erosion	X		X	X				As needed
Reestablish vegetation in erosion areas			X	X				Early spring
Replace mulch				X				Annually
Inspect structural elements during wet weather and compare to as-built plans	X	X		X	X	X	X	Annually
Keep records of all inspections and maintenance activities	X	X	X	X	X	X	X	Annually
Replace stone rip-rap	X						X	Every 3 – 5 years as needed
Make adjustments or replacements as determined by wet weather observations	X	X	X	X	X	X	X	As needed
Have a professional engineer perform emergency inspections upon identification of severe problems	X	X	X	X	X	X	X	As needed

R-TANK OPERATION, INSPECTION & MAINTENANCE

Operation

Your ACF R-Tank System has been designed to function in conjunction with the engineered drainage system on your site, the existing municipal infrastructure, and/or the existing soils and geography of the receiving watershed. Unless your site included certain unique and rare features, the operation of your R-Tank System will be driven by naturally occurring systems and will function autonomously. However, upholding a proper schedule of Inspection & Maintenance is critical to ensuring continued functionality and optimum performance of the system.

Inspection

Both the R-Tank and all stormwater pre-treatment features incorporated into your site must be inspected regularly. Inspection frequency for your system must be determined based on the contributing drainage area, but should never exceed one year between inspections (six months during the first year of operation).

Inspections may be required more frequently for pre-treatment systems. You should refer to the manufacturer requirements for the proper inspection schedule.

With the right equipment your inspection and measurements can be accomplished from the surface without physically entering any confined spaces. If your inspection does require confined space entry, you MUST follow all local/regional requirements as well as OSHA standards.

R-Tank Systems may incorporate Inspection Ports, Maintenance Ports, and/or adjoining manholes. Each of these features are easily accessed by removing the lid at the surface. With the cover removed, a visual inspection can be performed to identify sediment deposits within the structure. Using a flashlight, ALL access points should be examined to complete a thorough inspection.

Inspection Ports
Usually located centrally in the R-Tank System, these perforated columns are designed to give the user a base-line sediment depth across the system floor.

Maintenance Ports
Usually located near the inlet and outlet connections, you'll likely find deeper deposits of heavier sediments when compared to the Inspection Ports.

Manholes
Most systems will include at least two manholes - one at the inlet and another at the outlet. There may be more than one location where stormwater enters the system, which would result in additional manholes to inspect.

Bear in mind that these manholes often include a sump below the invert of the pipe connecting to the R-Tank. These sumps are designed to capture sediment before it reaches the R-Tank, and they should be kept clean to ensure they function properly. However, existence of sediment in the sump does NOT necessarily mean sediment has accumulated in the R-Tank.

After inspecting the bottom of the structure, use a mirror on a pole (or some other device) to check for sediment or debris in the pipe connecting to the R-Tank.

If sediment or debris is observed in any of these structures, you should determine the depth of the material. This is typically accomplished with a stadia rod, but you should determine the best way to obtain the measurement.

All observations and measurements should be recorded on an Inspection Log kept on file. We've included a form you can use at the end of this guideline.

Maintenance

The R-Tank System should be back-flushed once sediment accumulation has reached 6" or 15% of the total system height. Use the chart below as a guideline to determine the point at which maintenance is required on your system.

R-Tank Unit	Height	Max Sediment Dept
Mini	9.5"	1.5"
Single	17"	3"
Double	34"	5"
Triple	50"	6"
Quad	67"	6"
Pent	84"	6"

Before any maintenance is performed on your system, be sure to plug the outlet pipe to prevent contamination of the adjacent systems.

To back-flush the R-Tank, water is pumped into the system through the Maintenance Ports as rapidly as possible. Water should be pumped into ALL Maintenance Ports. The turbulent action of the water moving through the R-Tank will suspend sediments which may then be pumped out.

If your system includes an Outlet Structure, this will be the ideal location to pump contaminated water out of the system. However, removal of back-flush water may be accomplished through the Maintenance Ports, as well.

For systems with large footprints that would require extensive volumes of water to properly flush the system, you should consider performing your maintenance within 24 hours of a rain event. Stormwater entering the system will aid in the suspension of sediments and reduce the volume of water required to properly flush the system.

Once removed, sediment-laden water may be captured for disposal or pumped through a Dirtbag™ (if permitted by the locality).

ACF ENVIRONMENTAL
LET'S GET IT DONE
2831 Cardwell Road
Richmond, Virginia, 23234
800.448.3636
FAX 804.743.7779
acfenvironmental.com

Step-By-Step Inspection & Maintenance Routine

1) **Inspection**
    a. Inspection Port
        i. Remove Cap
        ii. Use flashlight to detect sediment deposits
        iii. If present, measure sediment depth with stadia rod
        iv. Record results on Maintenance Log
        v. Replace Cap
    b. Maintenance Port/s
        i. Remove Cap
        ii. Use flashlight to detect sediment deposits
        iii. If present, measure sediment depth with stadia rod
        iv. Record results on Maintenance Log
        v. Replace Cap
        vi. Repeat for ALL Maintenance Ports
    c. Adjacent Manholes
        i. Remove Cover
        ii. Use flashlight to detect sediment deposits
        iii. If present, measure sediment depth with stadia rod, accounting for depth of sump (if present)
        iv. Inspect pipes connecting to R-Tank
        v. Record results on Maintenance Log
        vi. Replace Cover
        vii. Repeat for ALL Manholes that connect to the R-Tank

2) **Maintenance**
    a. Plug system outlet to prevent discharge of back-flush water
    b. Determine best location to pump out back-flush water
    c. Remove Cap from Maintenance Port
    d. Pump water as rapidly as possible (without over-topping port) into system until at least 1”
    of water covers system bottom
    e. Replace Cap
    f. Repeat at ALL Maintenance Ports
    g. Pump out back-flush water to complete back-flushing
    h. Vacuum all adjacent structures and any other structures or stormwater pre-treatment systems that require attention
    i. Sediment-laden water may be captured for disposal or pumped through a Dirtbag™.
    j. Replace any remaining Caps or Covers
    k. Record the back-flushing event in your Maintenance Log with any relevant specifics

R-Tank Maintenance Log

Site Name:_____

Location:_____

System Owner:_____

Company Responsible for Maintenance:_____

Contact:_____

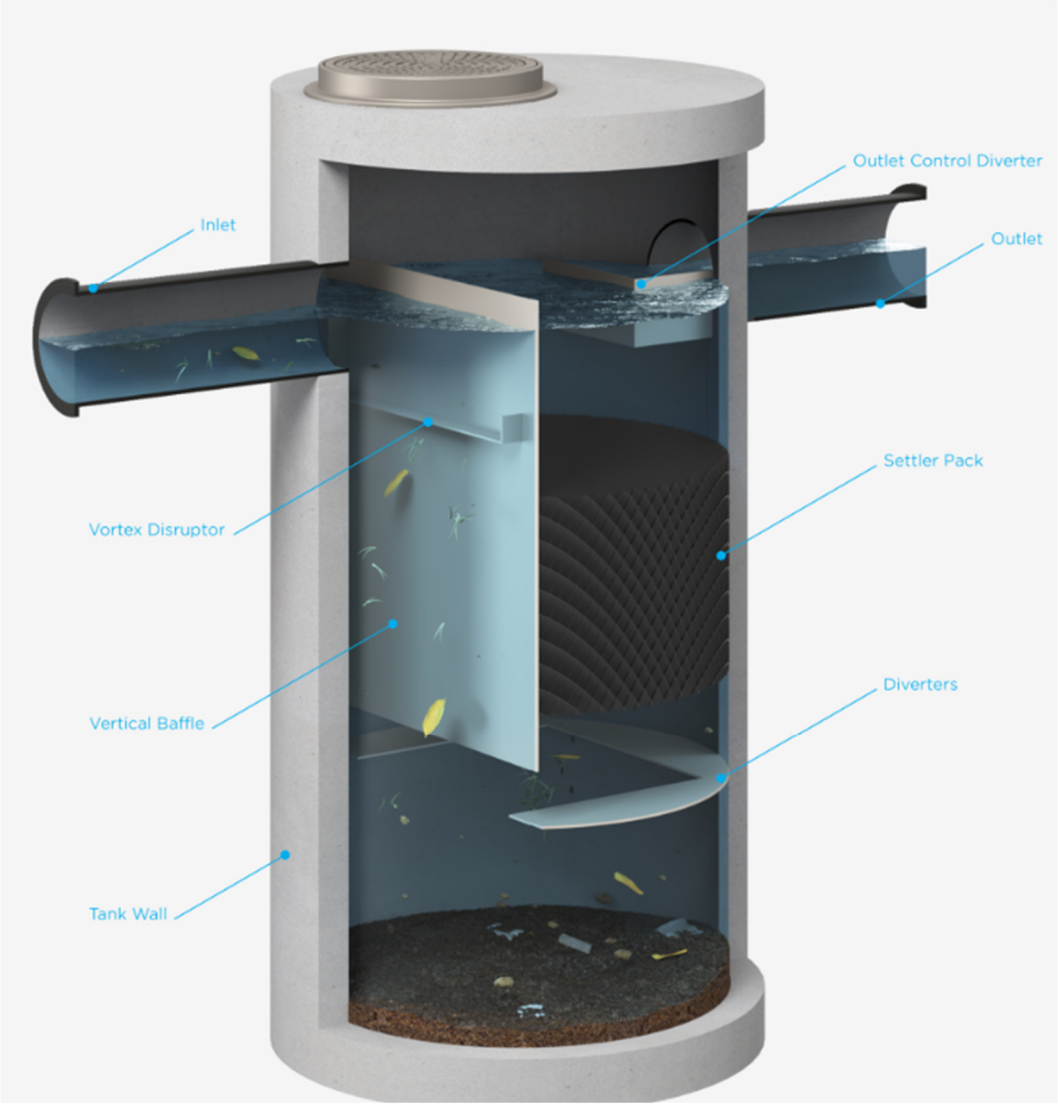
Phone Number:_____

Date	Location	Depth to Bottom	Depth to Sediment	Sediment Depth	Observations/Notes	Initials

StormTrap®

StormSettler®

StormSettler® Inspection and Maintenance Manual



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1287 Windham Parkway
Romeoville, Illinois 60446

StormSettler® Manufacturer's Inspection and Maintenance Manual

The StormSettler treatment device, manufactured by StormTrap, is a hydrodynamic separating device designed to capture and store pollutants from stormwater. StormSettler's maintenance frequency is site dependent and routine inspections are recommended to ensure that the system is functioning as designed. Please contact your authorized StormTrap representative if you have questions regarding the inspection and maintenance of the StormSettler system.

Inspection Scheduling

StormSettler inspections are important to assess the condition of the system internals to ensure peak performance. The frequency of inspections and maintenance is dependent on site specific loading conditions and rainfall frequency. Within the first year of operation, it is recommended that the unit be inspected quarterly to determine the rate of pollutant accumulation in order to develop a more accurate maintenance schedule. Inspections should be performed during dry weather conditions when no flow is entering the system. StormSettler systems are recommended to be inspected whenever the upstream and downstream catch basins and stormwater pipes of the stormwater collection system are inspected or maintained. If checked on an annual basis, the inspection should be conducted before the stormwater season begins to ensure that the system is functioning properly for the upcoming storm season.

Inspection and Maintenance Equipment

The following equipment is recommended to have during inspections:

- StormSettler Inspection and Maintenance Manual and Inspection Checklist
- Flashlight

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FAX 331 318 5347
WEB www.stormtrap.com
EMAIL info@stormtrap.com
1287 Windham Parkway
Romeoville, Illinois 60446

- Manhole hook/lifter or pry bar to lift the manhole cover
- Measuring device(s) of sufficient length to reach the bottom of the device's sump
- Proper personal protective equipment
- Adequate traffic control signage
- Pole with skimmer or net (optional for maintenance procedure)
- Vacuum truck or similar trailer mounted equipment (for maintenance procedure)

Inspection Procedure

Inspections should be done such that a sufficient time has lapsed since the most recent rain event to allow for a static water condition and rainfall is not anticipated to occur during the duration of the inspection procedure. StormSettler does not require entry into the system for inspection or maintenance; however, if entering the system is deemed necessary, it is prudent to note that prior to entry into any underground storm sewer or underground structure, appropriate OSHA and local safety regulations and guidelines should be followed.

To begin the inspection process, set up the necessary traffic control signage per local ordinances. Open all manhole covers using appropriate equipment and ensure the manhole covers are in a location that would not prohibit the inspection process. Visually inspect the system at all manhole access opening locations. During the visual inspection, ensure that all components are in working order. An inspection checklist is provided within this guide for ease and reference.

If any components are not in working order, contact your authorized StormTrap representative.

After the components are inspected, visually quantify the accumulation of trash, debris, and hydrocarbons within the system by using a measuring device such as a tape measure, grade stick, dipstick, etc. Measure and record the depth of trash, debris, and hydrocarbon

accumulation from the static water elevation (pipe elevation) to the average elevation of the trash and debris.

If sorbent materials are used for retention of hydrocarbons, the level of discoloration of the sorbent material should also be noted during the inspection process.

For sediment accumulation, utilize either a sludge sampler or a sediment pole to measure and document the amount of sediment accumulation. To determine the amount of sediment in the system with a sludge sampler, follow the manufacturer's instructions. If utilizing a sediment pole or similar device, first insert the pole to the top of the sediment layer and record the depth. Then, insert the pole to the bottom of the system and record the depth. The difference in the two measurements corresponds to the amount of sediment in the system. Alternatively, sediment depth can also be determined by taking a measurement from a known and consistent elevation (manhole frame, pipe invert, vertical baffle top, etc.) to the top of the sediment layer. That distance can then be compared to the measurement between the known elevation to the sump floor. The difference between these two measurements will correspond to the sediment layer depth.

After completion of the inspection process, ensure that manhole covers are replaced and securely seated in the manhole frame and remove traffic control signage.

StormSettler units can also be installed with remote monitoring technology that measures the current capacities within the system and reports the data to any internet capable device. If a remote monitoring device is used, proper maintenance of the device, such as replacement of batteries, cleaning sensor, etc. needs to be completed to ensure functionality of the remote monitoring technology.

If it is determined during the inspection process that the accumulation of trash and debris or sediment is at or near the capacities of the StormSettler device, maintenance should be performed to ensure performance is not impacted for subsequent storm events.

Maintenance Procedure

Maintenance should be done such that a sufficient time has lapsed since the most recent rain event to allow for a static water condition and rainfall is not anticipated to occur during the duration of the maintenance procedure.

To begin the maintenance process, set up the necessary traffic control signage per local ordinances. Open all manhole covers using appropriate equipment and ensure the manhole covers are in a location that would not prohibit the maintenance process.

Visually inspect the system at all manhole access opening locations. During the visual inspection, ensure that all components are undamaged. If any components are not in working order, contact your authorized StormTrap representative.

After the components are inspected, remove all accumulated trash, debris, and hydrocarbons stored on the surface of the water using the vacuum hose or pole with attached skimmer or net.

If sorbent materials are used, the materials may have to be moved to not impact pollutant removal. If significant discoloration of the sorbent material has occurred, simply remove the sorbent materials and replace upon completion of maintenance activities.

To remove sediment, insert the vacuum truck's hose on the inlet side of the vertical baffle into the sump. The system should be completely drained, and all sediment should be removed from the sump. For smaller diameter devices (3' or 4' units), a 6" or smaller vacuum hose diameter may be required for effective cleaning due to maneuverability constraints. If the vacuum truck that is being utilized has a hose diameter greater than 6", a smaller tube can be affixed to the boom hose with duct tape to improve maneuverability within the device.

If excessive sediment or debris buildup occurs within the device, components can be washed with sewer jetting equipment or a spray lance to remove stubborn materials. Particular

attention must be taken when spraying the settler pack. A wide spray nozzle is recommended around the settler pack to ensure there is no damage to the material.

After completion of the maintenance procedure, complete a post maintenance inspection to ensure that all components are in good condition. Ensure that manhole covers are replaced and securely seated in the manhole frame and remove traffic control signage. Dispose of all pollutants removed during maintenance per local, state, and federal guidelines and regulations.

Inspection and Maintenance Documentation

Proof of inspections and maintenance activities is the responsibility of the owner. All inspection and maintenance reports and any relevant data should be kept on site or at a location where they will be accessible in accordance with local requirements. It is a good practice to take time stamped photographs after every inspection and maintenance event to include within logs. It is also good practice to keep records of rainfall events between maintenance events and the weight of material removed, even if no report is required. Some municipalities may require inspection and maintenance reports be forwarded to the proper governmental permitting agency on an annual basis. Refer to your local regulations and ordinances for any additional maintenance requirements and schedules not contained herein. Inspections and maintenance activities should be performed to ensure performance is not impacted and the device performs as designed.

Inspection Items

- StormSettler Maintenance Manual and Inspection Checklist
- Flashlight
- Manhole hook/lifter or pry bar to lift the manhole cover
- Measuring device(s) of sufficient length to reach the bottom of the device's sump
- Proper personal protective equipment
- Adequate traffic control signage

Maintenance Items

- StormSettler Maintenance Manual and Inspection Checklist
- Flashlight
- Manhole hook/lifter or pry bar to lift the manhole cover
- Measuring device(s) of sufficient length to reach the bottom of the device's sump
- Proper personal protective equipment
- Adequate traffic control signage
- Pole with skimmer or net (optional for maintenance procedure)
- Vacuum truck or similar trailer mounted equipment (for maintenance procedure)

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Romeoville, Illinois 60446

StormTrap

StormSettler	StormSettler Inspection Checklist

Structure ID:		
Location/Address:		
Inspector Name:		Inspector Contact Information:
Date:	Time:	Weather Conditions:
Rain in the Last 48hrs:		If yes, list amount and timing:

*Do not enter underground chambers to inspect system unless Occupational Safety & Health Administration (OSHA) regulations for confined space entry are followed.
*Follow inspection and maintenance instructions provided by system manufacturer.
*Please circle the condition of each inspection item below. 1 being the worst and 5 being the best condition.

Inspection Item	Condition					Comment	Action Needed	
1.) Frames and Covers								
Accumulation of debris and/or sediment	1	2	3	4	5		Yes	No
Component(s) structural condition	1	2	3	4	5		Yes	No
2.) Inlet Pipe(s)								
Accumulation of debris and/or sediment	1	2	3	4	5		Yes	No
Component(s) structural condition	1	2	3	4	5		Yes	No
3.) Vortex Disruptor								
Accumulation of debris and/or sediment	1	2	3	4	5		Yes	No
Component(s) structural condition	1	2	3	4	5		Yes	No
4.) Verticle Baffle								
Accumulation of debris and/or sediment	1	2	3	4	5		Yes	No
Component(s) structural condition	1	2	3	4	5		Yes	No
5.) Enhanced Settling Pack								
Accumulation of debris and/or sediment	1	2	3	4	5		Yes	No
Component(s) structural condition	1	2	3	4	5		Yes	No
6.) Flow Modifiers								
Accumulation of debris and/or sediment	1	2	3	4	5		Yes	No
Component(s) structural condition	1	2	3	4	5		Yes	No

7.) Outlet Control Diverter								
Excessive accumulation of debris and/or sediment present	1	2	3	4	5		Yes	No
Component(s) structurally sound	1	2	3	4	5		Yes	No
8.) Outlet Pipe								
Accumulation of debris and/or sediment	1	2	3	4	5		Yes	No
Component(s) structurally sound	1	2	3	4	5		Yes	No
9.) Concrete Chamber								
Component(s) structural condition	1	2	3	4	5		Yes	No
10.) Sediment Storage Capacity								
Sediment storage capacity	1	2	3	4	5		Yes	No
Additional Notes:								
Wet Weather Inspection Needed:			Yes		No			
Maintenance Activities Needed:			Yes		No			

Stormwater BMP Maintenance Log

BMP Structure	Inspector	Date	Work Performed	Comments
Pavement Sweeping				
Grass Swales				
Area Drains				
Catch Basins				
Diversion Structures				
Riprap Sediment Forebay				
Hydrodynamic Separators				
Bioretention Basin 1				
Bioretention Basin 2				
Bioretention Basin 3				
Subsurface Sand Filter 1				
Subsurface Sand Filter 2				
Subsurface Sand Filter 3				
Subsurface Sand Filter 4				
Subsurface Sand Filter 5				
Subsurface Sand Filter 6				
Stormwater Outfalls				
Other				
Additional Comments:				

APPENDIX B: STORMWATER QUALITY CALCULATIONS

Woodard & Curran
12 MOUNTFORT STREET
PORTLAND, MAINE 04101

CLIENT: IDEALS
PROJECT: Phase 1 Development
CALCS BY: AL/LS
DATE: 10/27/2023
PROJECT NO.: 233482.00

Redevelopment Treatment Calculations - Per Section 4.C.2.d of the MaineDEP Chapter 500 Rules

Area of Redevelopment (acres) = 14.51

a. Existing Pollutant Impact

Land Use	Pollutant Ranking	Land Area (Ac.)	Impact
High Use Roads/Parking Lot	5	0.00	0.00
Other Roads/Medium Use Parking Lot	4	2.44	9.74
Other Parking Lots/Flat Asphalt Roofs/Industrial Roofs	3	6.35	19.04
Other Roofs/Landscaped Area/Paved Walkway	2	4.74	9.48
Non-grass Landscaping/Stormwater	1	0.99	0.99
Forest/Meadow	0	0.00	0.00
			39.25

b. Proposed Pollutant Impact

Land Use	Pollutant Ranking	Land Area (Ac.)	Impact
High Use Roads/Parking Lot	5	1.76	8.78
Other Roads/Medium Use Parking Lot	4	1.13	4.52
Other Parking Lots/Flat Asphalt Roofs/Industrial Roofs	3	0.04	0.12
Other Roofs/Landscaped Area/Paved Walkway	2	10.89	21.78
Non-grass Landscaping/Stormwater	1	0.69	0.69
Forest/Meadow	0	0.00	0.00
			35.89

c. Existing Impact/Total Redevelopment Acres

2.705

d. Proposed Impact/Total Redevelopment Acres

2.474

e. Item D Minus Item C

-0.23

Ranked Impact Change Due to Redevelopment	Percentage of Developed Area that Must be Treated
0.0 or less	0% (Stormwater projects)
	50% (Site projects)
≥ 0.0 to ≤ 1.0	60%
> 1.0 to ≤ 2.0	70%
> 2.0 to ≤ 3.0	80%
> 3.0	Same treatment level as for new development

Stormwater Treatment Summary	*Treatment Percentage*	*Treated Area (SF)*
Required	50.0%	316,023
Provided	50.1%	316,413

WQV Summary	*Subsurface Sand Filter 1*	*Subsurface Sand Filter 2*	*Subsurface Sand Filter 3*	*Subsurface Sand Filter 4*	*Subsurface Sand Filter 5*
Proposed Treated Area (SF)	55,818	39,804	92,040	5,637	42,990
WQV Required (CF)	3,795	2,866	6,561	445	3,552
WQV Provided (CF)	6,501	4,855	11,204	992	5,589

WQV Summary	*Subsurface Sand Filter 6*	*Bioretention Basin 1**	*Bioretention Basin 2*	*Bioretention Basin 3*
Proposed Treated Area (SF)	12,500	19,875	30,310	17,439
WQV Required (CF)	1,042	921	1,208	745
WQV Provided (CF)	1,798	921	1,225	784
**Bioretention Basin 1 volume is fixed by site constraints; proposed treated area is calculated based on the fixed basin volume*				

Redevelopment Treatment Calculations - Per Section 5 of the City of Portland Technical Manual

Area of non-roof, redeveloped impervious surface (acres) = 5.43

Area of non-roof, redeveloped impervious surface treated (acres) = 3.13 58% > 50% required

12 MOUNTFORT STREET
PORTLAND, MAINE 04101

CLIENT: IDEALS
PROJECT: Phase 1 Development
CALCS BY: AL/LS
DATE: 10/27/2023
PROJECT NO.: 233482.00

Sizing Calculations

Water Quality Volume for Subsurface System 1

WQV = (1" * Impervious Area) + (0.4" * Pervious Area)

Impervious Area =	38697	SF
Pervious Area =	17121	SF
WQV Required =	**3795**	CF
WQV Provided =	**6501**	CF

Surface Area = (5%*Impervious Area) + (2%*Pervious Area)

Filter Surface Area Required=	**2277**	SF
Filter Surface Area Provided=	**2738**	SF

Sediment Pre-treatment = (55.6 CF/Acre) * (acres of non-roof impervious)

Non-Roof Impervious Area (total) =	38697	SF
Total Volume Required =	**49**	CF
Method: Hydrodynamic Separator, Riprap Sediment Forebay and Pretreatment Row		
Total Volume Provided =	**68**	CF

Water Quality Volume for Subsurface System 2

WQV = (1" * Impervious Area) + (0.4" * Pervious Area)

Impervious Area =	30793	SF
Pervious Area =	9011	SF
WQV Required =	**2866**	CF
WQV Provided =	**4855**	CF

Surface Area = (5%*Impervious Area) + (2%*Pervious Area)

Filter Surface Area Required=	**1720**	SF
Filter Surface Area Provided=	**2350**	SF

Sediment Pre-treatment = (55.6 CF/Acre) * (acres of non-roof impervious)

Non-Roof Impervious Area (total) =	5139	SF
Total Volume Required =	**7**	CF
Method: Pretreatment Row		
Total Volume Provided =	**48**	CF

Water Quality Volume for Subsurface System 3

WQV = (1" * Impervious Area) + (0.4" * Pervious Area)

Impervious Area =	69858	SF
Pervious Area =	22182	SF
WQV Required =	**6561**	CF
WQV Provided =	**11204**	CF

Surface Area = (5%*Impervious Area) + (2%*Pervious Area)

Filter Surface Area Required=	**3937**	SF
Filter Surface Area Provided=	**4751**	SF

Sediment Pre-treatment = (55.6 CF/Acre) * (acres of non-roof impervious)

Non-Roof Impervious Area (total) =	69858	SF
Total Volume Required =	**89**	CF
Method: Hydrodynamic Separator and Pretreatment Rows		
Total Volume Provided =	**109**	CF

Woodard & Curran
12 MOUNTFORT STREET
PORTLAND, MAINE 04101

CLIENT: IDEALS
PROJECT: Phase 1 Development
CALCS BY: AL/LS
DATE: 10/27/2023
PROJECT NO.: 233482.00

Sizing Calculations (cont.)

Water Quality Volume for Subsurface System 4

WQV = (1" * Impervious Area) + (0.4" * Pervious Area)

Impervious Area =	5148	SF
Pervious Area =	489	SF
WQV Required =	**445**	CF
WQV Provided =	**992**	CF

Surface Area = (5%*Impervious Area) + (2%*Pervious Area)

Filter Surface Area Required=	**267**	SF
Filter Surface Area Provided=	**466**	SF

Sediment Pre-treatment = (55.6 CF/Acre) * (acres of non-roof impervious)

Non-Roof Impervious Area (total) =	1673	SF
Total Volume Required =	**2**	CF
Method: Pretreatment Row		
Total Volume Provided =	**8**	CF

Water Quality Volume for Subsurface System 5

WQV = (1" * Impervious Area) + (0.4" * Pervious Area)

Impervious Area =	42382	SF
Pervious Area =	608	SF
WQV Required =	**3552**	CF
WQV Provided =	**5589**	CF

Surface Area = (5%*Impervious Area) + (2%*Pervious Area)

Filter Surface Area Required=	**2131**	SF
Filter Surface Area Provided=	**2595**	SF

Sediment Pre-treatment = (55.6 CF/Acre) * (acres of non-roof impervious)

Non-Roof Impervious Area (total) =	5160	SF
Total Volume Required =	**7**	CF
Method: Pretreatment Row		
Total Volume Provided =	**63**	CF

Water Quality Volume for Subsurface System 6

WQV = (1" * Impervious Area) + (0.4" * Pervious Area)

Impervious Area =	12500	SF
Pervious Area =	0	SF
WQV Required =	**1042**	CF
WQV Provided =	**1798**	CF

Surface Area = (5%*Impervious Area) + (2%*Pervious Area)

Filter Surface Area Required=	**625**	SF
Filter Surface Area Provided=	**879**	SF

Sediment Pre-treatment = (55.6 CF/Acre) * (acres of non-roof impervious)

Non-Roof Impervious Area (total) =	0	SF
Total Volume Required =	**0**	CF
Method: Pretreatment Row		
Total Volume Provided =	**21**	CF

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CLIENT: IDEALS
PROJECT: Phase 1 Development
CALCS BY: AL/LS
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Sizing Calculations (cont.)

Bioretention Basin 1 - Per Ch. 7.2 Vol. III MaineDEP Stormwater BMP Manual

WQV = (1" * Impervious Area) + (0.4" * Pervious Area)

Impervious Area* =	5175	SF	
Pervious Area* =	14700	SF	
Sum* =	0.46	ac.	< 1 ac.
WQV Required* =	**921**	CF	
WQV Depth =	6	in	</=6"
Soil Filter Void Space =	40	%	
WQV Storage (Ponding) =	658	CF	
WQV Storage (Soil)* =	263	CF	
WQV Storage (TOTAL) =	**921**	CF	

**Bioretention Basin 1 volume is fixed by site constraints; proposed treated area is calculated based on the fixed basin volume.*

Surface Area = (7%*Impervious Area) + (3%*Pervious Area)

Filter Surface Area Required (Total)=	**803**	SF	
Filter Surface Area Provided =	**1315**	SF	<2,000 SF

Sediment Pre-treatment = (55.6 CF/Acre) * (acres of non-roof impervious)

Non-Roof Impervious Area (total) =	8535	SF	
Total Volume Required =	11	CF	
Method: Grass Swale			

Bioretention Basin 2 - Per Ch. 7.2 Vol. III MaineDEP Stormwater BMP Manual

WQV = (1" * Impervious Area) + (0.4" * Pervious Area)

Impervious Area =	3952	SF	
Pervious Area =	26358	SF	
Sum =	0.70	ac.	< 1 ac.
WQV Required =	**1208**	CF	
WQV Depth =	6	in	</=6"
Soil Filter Void Space =	40	%	
WQV Storage (Ponding) =	875	CF	
WQV Storage (Soil)* =	350	CF	
WQV Storage (TOTAL) =	**1225**	CF	

Surface Area = (7%*Impervious Area) + (3%*Pervious Area)

Filter Surface Area Required (Total)=	**1067**	SF	
Filter Surface Area Provided =	**1750**	SF	<2,000 SF

Sediment Pre-treatment = (55.6 CF/Acre) * (acres of non-roof impervious)

Non-Roof Impervious Area (total) =	3952	SF	
Total Volume Required =	5	CF	
Method: Grass Swale			

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CLIENT: IDEALS
PROJECT: Phase 1 Development
CALCS BY: AL/LS
DATE: 10/27/2023
PROJECT NO.: 233482.00

Sizing Calculations (cont.)

Bioretention Basin 3 - Per Ch. 7.2 Vol. III MaineDEP Stormwater BMP Manual

WQV = (1" * Impervious Area) + (0.4" * Pervious Area)

Impervious Area =	3278	SF	
Pervious Area =	14161	SF	
Sum =	0.40	ac.	< 1 ac.
WQV Required =	**745**	CF	
WQV Depth =	6	in	</=6"
Soil Filter Void Space =	40	%	
WQV Storage (Ponding) =	560	CF	
WQV Storage (Soil)* =	224	CF	
WQV Storage (TOTAL) =	**784**	CF	

Surface Area = (7%*Impervious Area) + (3%*Pervious Area)

Filter Surface Area Required (Total)=	**654**	SF	
Filter Surface Area Provided =	**1120**	SF	<2,000 SF

Sediment Pre-treatment = (55.6 CF/Acre) * (acres of non-roof impervious)

Non-Roof Impervious Area (total) =	3278	SF	
Total Volume Required =	4	CF	
Method: Grass Swale			

APPENDIX C: FIGURES

MATCHLINE

MATCHLINE

REDEVELOPMENT AREA

LEGEND

- POLLUTANT RANKING 5
- POLLUTANT RANKING 4
- POLLUTANT RANKING 3
- POLLUTANT RANKING 2
- POLLUTANT RANKING 1
- POLLUTANT RANKING 0

BAR SCALE
1" = 40'
CHECK GRAPHIC SCALE BEFORE USING

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

Woodard & Curran

LAND-USE PERMIT SET

NOT FOR CONSTRUCTION

Number	Revision	Date

STATE OF MAINE
AMY N. LEBEL
17065
LICENSED
PROFESSIONAL ENGINEER

Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 OCTOBER 2023
Scale	1"=40'

Drawing Title

EXISTING SITE IMPACT ANALYSIS

FIG. A



IDEALS
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Roux Campus

The Roux Institute

CambridgeSeven
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1050 Massachusetts Avenue
Cambridge, MA 02138
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Scale	1"=40'

Drawing Title

PROPOSED SITE IMPACT ANALYSIS

FIG. B

MATCHLINE

TREATMENT AREA, TYP.

REDEVELOPMENT AREA

REDEVELOPMENT AREA

MATCHLINE

BAR SCALE
1" = 40'
CHECK GRAPHIC SCALE BEFORE USING

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Scale	1"=40'

Drawing Title

REDEVELOPMENT FIGURE

FIG. C



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Architects and Planners
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Cambridge, MA 02138
617 492-7000 Fax 492-7007

Woodard & Curran

LAND-USE PERMIT SET

TREATMENT AREA LEGEND

STORMWATER TREATMENT SYSTEM	LOCATION	DRAINAGE AREA
SAND FILTER #1	SF1	
SAND FILTER #2	SF2	
SAND FILTER #3	SF3	
SAND FILTER #4	SF4	
SAND FILTER #5	SF5	
SAND FILTER #6	SF6	
BIORETENTION #1	BR1	
BIORETENTION #2	BR2	
BIORETENTION #3	BR3	

40' 0 40' 80'
BAR SCALE
1" = 40'
CHECK GRAPHIC SCALE BEFORE USING

NOT FOR CONSTRUCTION

Number	Revision	Date

STATE OF MAINE
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17065
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Scale	1"=40'

Drawing Title

TREATMENT AREA FIGURE

FIG. D

Woodard & Curran

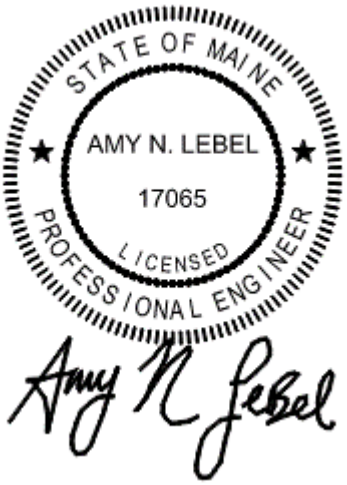
woodardcurran.com

Att. L1

ROUX INSTITUTE AT NORTHEASTERN UNVERSITY

Stormwater Management Plan

1 Bean Pot Circle
Portland, ME



12 Mountfort Street
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Prepared for
Initiative for Digital Engineering and Life Sciences (IDEALS)

March 2024

TABLE OF CONTENTS

SECTION **PAGE NO.**

1. INTRODUCTION & BACKGROUND 1-1

2. EXISTING CONDITIONS 2-1

3. PROPOSED DEVELOPMENT 3-1

4. STORMWATER STANDARDS 4-1

4.1 Basic Standard (Soil Erosion & Sediment Control) 4-1
4.2 Flooding Standard (Stormwater Quantity) 4-1
4.3 General & Redevelopment Standards (Stormwater Quality) 4-2
4.3.1 Maine DEP Redevelopment Standards 4-2
4.3.2 City of Portland Redevelopment Standards 4-2
4.3.3 Proposed Treatment Systems 4-2

5. INSPECTION & MAINTENANCE REQUIREMENTS 5-1

APPENDICES

Appendix A: Stormwater Inspection & Maintenance Plan
Appendix B: Stormwater Quality Calculations
Appendix C: Figures
Appendix D: Manufacturer Design Review Letter

1. INTRODUCTION & BACKGROUND

This narrative report is in support of a Major Site Plan Application and Site Location of Development (SLOD) Permit Application on behalf of Northeastern University (Applicant) and their agent, Initiative for Digital Engineering and Life Sciences (IDEALS), for development of the Roux Institute at Northeastern University campus located at 1 Bean Pot Circle in Portland, Maine (the Site). This Stormwater Management Plan (SWMP) describes existing site conditions, the proposed development, compliance with applicable stormwater standards, and inspection and maintenance requirements for the proposed stormwater system for Phase 1.

Phase 1 includes construction of a Learning, Research, and Collaboration Building, renovation of the Bean Building to create business incubator space, construction of a parking garage, development of a childcare facility, replacement of the pier, development of a coastal path, and other site improvements. The proposed Phase 1 project is designed with consideration to future development, with the interior-most and waterfront spaces being developed first to reduce impacts of construction of future phases. Likewise, the stormwater management system has been designed to ensure stormwater standards are met for the development during each phase, with consideration and capacity for full build-out of the Site to minimize future construction impacts.

The project is subject to stormwater management standards through the requirements of both the City of Portland Site Plan and the Maine DEP Site Location of Development permit applications. The following report demonstrates how the development of the Site meets the stormwater standards outlined in Section 5 of the City of Portland's Technical Manual and in the Maine DEP's Chapter 500.

2. EXISTING CONDITIONS

The Site is located within Portland's East Deering neighborhood, at the end of Sherwood Street, adjacent to Maine Yacht Services and near a residential area of single and multi-family homes (three-story apartment buildings) and a commercial node featuring restaurants, bars, automobile mechanics, and offices. While proximate to these areas, the Site is remarkably buffered; I-295 to the west, state-owned vacant parcels to the north, a disused rail corridor and marine business to the east, and Casco Bay to the south collectively surround the property.

The Site includes approximately 13 acres above mean higher high water (MHHW) line as well as an adjacent 11 acres of submerged lands. A survey of the Site was completed by VHB, Inc. (dated June 30, 2021 and July 17, 2023). Approximately 9 acres of land above the mean higher high water line are impervious (paved areas, building roofs, foundations, etc.). The remaining 4 acres of permeable area include lawn and approximately half an acre of vegetated non-lawn area adjacent to the rail corridor abutting the site to the east. No stormwater treatment systems exist on the Site.

The Site was occupied by residences and a lobster cannery prior to 1913, when Burnham & Morrill (B&M) relocated its food manufacturing operations to the Site from Franklin Street. Shortly thereafter, the flagship Cannery Building (Bean Building) was constructed, as well as the adjacent codfish building on the pier. The site was further improved with buildings and parking to support operations. Due to its industrial use, the site is surrounded by security fencing, and the interior and waterfront have historically been inaccessible to the public. Canning operations ceased in 2021.

On May 23, 2023, IDEALS received a demolition permit from the City, and commenced demolition of all existing buildings on the site, retaining only the Bean Building and the Codfish Building. The demolished building areas remain stabilized with perimeter erosion control measures, and for the purposes of evaluating the Site for stormwater permitting, these areas have been considered as impervious existing roof.

Topography of the Site generally slopes from north to south toward Casco Bay. Runoff from the Site drains via sheet flow in a southerly direction to a series of catch basins that ultimately discharge to Casco Bay. The highest elevations are near Sherwood Street, at elevation 28 +/-. The lowest grades are near the loading dock at the B&M Bean Building, at elevation 8.5 +/-. These low areas are only 1-foot above Highest Astronomical Tide.

3. PROPOSED DEVELOPMENT

The proposed development of Phase 1 and reconstruction of Sherwood Street will result in approximately 14.5-acres of disturbance and approximately 7.3-acres of impervious area, for a net decrease in impervious area of approximately 2.6-acres. Proposed work includes:

- Construction of the Learning, Research, and Collaboration Building;
- Renovation of the Bean Building;
- Construction of a parking garage;
- Development of a childcare facility;
- Replacement of the pier;
- Development of a coastal path; and
- Landscaping, utility, and site improvements.

The proposed drainage conveyance system in Phase 1 is comprised of a series of drainage swales, catch basins, area drains, field inlets, trench drains, hydrodynamic separators, outlet control structures, and drainage manholes, which ultimately discharge to Casco Bay via three outfalls. Stormwater treatment for the Site in Phase 1 is provided via bioretention basins and subsurface sand filters. The proposed stormwater management systems are discussed in further detail in the following sections.

Sherwood Street will also be reconstructed as part of this project from the intersection of Veranda Street, underneath the Interstate 295 overpass bridge and into the Site. The design of Sherwood Street from Veranda Street through the existing Interstate 295 overpass is shown on the roadway design drawings by VHB and the design beyond the overpass into the Site is shown on the design drawings by Woodard & Curran. Drainage from Sherwood Street is managed separately from the rest of the Site. Woodard & Curran met with City of Portland Public Works staff to discuss Sherwood Street and will be working with them to resolve how best to connect stormwater infrastructure within the reconstructed street.

The reconstruction of Sherwood Street results in an increase in impervious area of approximately 0.2 acres in the Sherwood Street right-of-way; therefore, Sherwood Street has been included in the stormwater treatment calculations for the Site. Limited space is available for treatment of stormwater in the Sherwood Street right-of-way. Woodard & Curran confirmed with City of Portland Public Works that Sherwood Street redeveloped area may be factored into on-site stormwater treatment calculations.

4. STORMWATER STANDARDS

The project is subject to the MaineDEP Chapter 500 and City of Portland Technical Manual Section 5 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.

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", latest edition. 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 5 of this Report.

4.2 Flooding Standard (Stormwater Quantity)

Runoff from the proposed project will primarily discharge to the adjacent Casco Bay, which is a tidal waterbody, via either sheet flow or the on-site storm drain system. In accordance with Section 4.F(3) of the MaineDEP Chapter 500 Stormwater Standards, a project is eligible for a waiver from the Flooding Standard if it discharges to a coastal wetland or a major river segment. As noted in the description of the proposed development, the only portion of the Site that will not discharge directly to Casco Bay is the drainage from within Sherwood Street. We respectfully request a waiver from the Flooding Standard for the campus development.

4.3 General & Redevelopment Standards (Stormwater Quality)

The proposed project is subject to the redevelopment standards for stormwater quality from both the MaineDEP and the City of Portland. Calculations demonstrating compliance with stormwater quality standards are provided in Appendix B. A figure showing the area of redevelopment is included in Appendix C of this Report.

4.3.1 Maine DEP Redevelopment Standards

Calculations have been prepared in accordance with Section 4.C(2)(d) of the MaineDEP Chapter 500 Stormwater Standards to determine how much treatment is required for the proposed redevelopment project. The project has been evaluated as a "Site" project as it is required to obtain a Site Location of Development Permit. Based on the impact analysis calculations provided in Appendix B of this Report, it has been determined that the proposed project is required to provide treatment for 50% of the total redevelopment area. Figures showing existing and proposed pollutant ranking areas are provided in Appendix C. With the proposed stormwater management system, greater than 50% of the redevelopment area will be captured and treated. Runoff from proposed driveways, parking areas, building roofs, and interior impervious plazas was prioritized for treatment; figures showing redevelopment and treatment areas is provided in Appendix C.

4.3.2 City of Portland Redevelopment Standards

For redevelopment sites, per Section 5 of the City of Portland's Technical Manual, a minimum of 50% of the non-roof redeveloped impervious surface on a site must receive stormwater treatment. The calculations included in Appendix B show that greater than 50% of the non-roof redeveloped impervious surface on the Site will be treated by the proposed stormwater systems.

4.3.3 Proposed Treatment Systems

As previously described, stormwater systems will consist of bioretention basins and subsurface sand filters. The proposed stormwater systems have been designed based on Volume III of the DEP Stormwater BMP Manual; calculations demonstrating compliance with the BMP design requirements are provided in Appendix B and design details are provided on the drawings.

Three bioretention basins are proposed to treat stormwater from interior sidewalks, plaza and landscaped areas. Outlet control structures and emergency spillways are provided to manage runoff beyond the 1-inch water quality storm event.

The subsurface sand filters are comprised of proprietary R-Tank modules over sand filters. The R-Tank system has been designed to detain the water quality volume for the upgradient area. Diversion structures are provided upgradient of proposed subsurface sand filters to manage runoff beyond the 1-inch water quality storm event. A letter that demonstrates manufacturer review and approval of the design is provided as Appendix D.

The proposed design includes multiple best management practices to reduce sediment loading upgradient of the stormwater filtration systems, including deep sump catch basins, offline catch basin drainage design, sediment forebay, grass swales, hydrodynamic separators, and pretreatment rows. The sediment pretreatment devices have been sized in accordance with the Maine DEP BMP Manual for non-roof impervious drainage area. Sizing calculations are provided in Appendix B.

5. 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 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. A Stormwater Maintenance Agreement will also be provided and will be signed and recorded following approval.

APPENDIX A: STORMWATER INSPECTION & MAINTENANCE PLAN

STORMWATER INSPECTION & MAINTENANCE PLAN

The Roux Institute at Northeastern University Phase 1

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 "Qualified Post-Construction Stormwater Inspector" with knowledge of stormwater management and erosion and sediment control, including the standards and conditions in the permit, who conducts post-construction stormwater best management practice inspections for compensation and who has received the appropriate training for the same from DEP or otherwise meets DEP requirements to perform said inspections, shall conduct the inspections and perform maintenance of the facilities.

Inspection and maintenance activities will be performed per the attached checklist, schedule, and manufacturer guidelines; an example page of the BMP Maintenance Log that shall be kept on-site is also attached. The owner or operator of the BMP shall take corrective action(s) to address any deficiency as soon as possible after the deficiency is discovered.

INSPECTION AND MAINTENANCE OF STORMWATER SYSTEMS

Trash, debris, and sediment shall be removed from storm drainage 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. These areas will be kept clean and clear through periodic sweeping and winter plowing as required. Inspections will also ensure pavement markings are repainted as needed to maintain proper traffic circulation. Paved areas will be plowed and sanded as often as necessary to maintain public safety. Periodic sweeping of pavement will reduce the amount of sediment available to enter the stormwater systems, in turn reducing the need to clean the stormwater systems.

Bioretention Basin

The bioretention basins should be inspected after major storms (one-inch storm or greater in 24 hours) in the first year to be sure they are functioning properly. Thereafter, the basins should be inspected at least once every six months to ensure that they are draining within 24 to 48 hours following a one-inch storm or greater. If the system drains too fast, an orifice may need to be added on the underdrain outlet. If ponding exceeds 48 hours, the top of the filter bed must be rototilled to reestablish the soil's filtration capacity. If ponding exceeds 72 hours, the top several inches of the filter shall be replaced with fresh material.

Debris and sediment buildup shall be removed from the basin as needed but at least annually and shall be disposed of in an acceptable manner. Any bare area or erosion rills shall be repaired with new filter media or sandy loam then mulched or seeded. Fertilization of the bioretention basin should be avoided unless absolutely necessary to establish vegetation. Harvesting and pruning of excessive growth will need to be done occasionally. Weeding to control unwanted or invasive plants may also be necessary. Mulch shall be replaced annually or as needed.

Subsurface Sand Filter

The subsurface sand filter should be inspected after every major storm in the first year to be sure it is functioning properly. Thereafter, the filter should be inspected at least once every six months to ensure that it is draining within 24 to 48 hours following a one-inch storm or greater. If the system drains too fast, an orifice may need to be added on the underdrain outlet or, if already present, may need to be modified. The sediment pretreatment systems should be cleaned when necessary. The proprietary subsurface detention component of the sand filter (R-Tank modules) must be inspected and maintained per the manufacturer's guidelines, which are outlined in the attached guidance document.

Sediment Forebay

Debris and sediment buildup shall be removed from sediment forebays as needed but at least annually and shall be disposed of in an acceptable manner.

Grass Swale

Debris, sediment buildup, and woody vegetation shall be removed from the grass swales as needed but at least annually and shall be disposed of in an acceptable manner.

Hydrodynamic Separator

Hydrodynamic separators must be inspected and maintained per the manufacturer's guidelines. Sediment shall be removed at least annually and when sediment volume exceeds the sediment storage capacity of the device.

REPORTING

In addition to completing the inspection and maintenance activities described herein, the Qualified Post-Construction Stormwater Inspector shall submit an Annual Report to the City of Portland Department of Public Works in accordance with City of Portland Code of Ordinances Sec. 32-38. The annual report shall include a record of deficiencies and corrective actions taken to address the deficiencies as soon as possible including maintenance, repair, or replacement to return the BMP to function as intended by the approved Stormwater Management Plan.

STORMWATER INSPECTION CHECKLIST

Inspection by: _____ Date: _____

Stormwater Feature	Condition						Comments
Vegetative cover / slopes	no bare spots, no evidence of rill erosion		some bare spots, some rill erosion		large bare areas, extensive erosion		
Drainage channels/swales	no erosion, channels clear		some erosion and siltation		major erosion, channels clogged		
Sediment Forebay	no siltation		some siltation		heavily silted in		
Sediment Forebay	inlet/outlet clear		some debris		completely blocked		
Hydrodynamic Separator*	no siltation		some siltation		heavily silted in		
Hydrodynamic Separator*	inlet/outlet clear		some debris		completely blocked		
Subsurface Drainage System	no siltation		some siltation		heavily silted in		
Subsurface Drainage System	no clogging/flooding		some clogging/flooding		heavy clogging/flooding		
Subsurface Drainage System	outlet free of erosion		some erosion at outlet		outlet heavily eroded		
Subsurface Drainage System	inlet/outlet clear		some debris		completely blocked		
Bioretention Basin	no siltation		some siltation		heavily silted in		
Bioretention Basin	side slopes free of erosion		some erosion on side slopes		side slopes heavily eroded		
Bioretention Basin	inlet free of erosion		some erosion at inlet		inlet heavily eroded		
Bioretention Basin	outlet clear		some debris		completely blocked		
Bioretention Basin	healthy/robust plant growth		plants unhealthy		plants dead or overgrown		
Bioretention Basin	drains in less than 24 hours		drains between 24 and 48 hours		ponding exceeds 48 hours		
Subsurface Sand Filter*	no siltation		some siltation		heavily silted in		
Subsurface Sand Filter*	no clogging/flooding		some clogging/flooding		heavy clogging/flooding		
Subsurface Sand Filter*	inlet/outlet clear		some debris		completely blocked		

**See attached manufacturer's guidelines for system maintenance and inspection.*

Recommended Actions: _____

_____

Actions Completed: _____ Date: _____

STORMWATER MANAGEMENT MAINTENANCE TASKS AND RECOMMENDED SCHEDULE

TASKS	SEDIMENT FOREBAY	HYDRODYNAMIC SEPARATOR	GRASS CHANNELS/ SWALES	VEGETATIVE COVER/ SLOPES	BIORETENTION BASIN	OUTLET CONTROL STRUCTURE	SUBSURFACE SAND FILTER	STORM DRAIN PIPES	SCHEDULE
Inspect for sediment accumulation	X	X	X	X	X	X	X	X	Spring and Fall
Inspect after heavy rains			X	X					As needed
Remove sediment accumulation	X	X	X		X	X	X	X	As needed
Clean debris	X	X	X	X	X	X	X	X	As needed
Inspect for erosion	X		X	X	X				As needed
Reestablish vegetation in erosion areas			X	X	X				Early spring
Replace mulch					X				Annually
Inspect structural elements during wet weather and compare to as-built plans	X	X			X	X	X	X	Annually
Keep records of all inspections and maintenance activities	X	X	X	X	X	X	X	X	Annually
Replace stone rip-rap	X							X	Every 3 – 5 years as needed
Make adjustments or replacements as determined by wet weather observations	X	X	X	X	X	X	X	X	As needed
Have a professional engineer perform emergency inspections upon identification of severe problems	X	X	X	X	X	X	X	X	As needed

R-TANK OPERATION, INSPECTION & MAINTENANCE

Operation

Your ACF R-Tank System has been designed to function in conjunction with the engineered drainage system on your site, the existing municipal infrastructure, and/or the existing soils and geography of the receiving watershed. Unless your site included certain unique and rare features, the operation of your R-Tank System will be driven by naturally occurring systems and will function autonomously. However, upholding a proper schedule of Inspection & Maintenance is critical to ensuring continued functionality and optimum performance of the system.

Inspection

Both the R-Tank and all stormwater pre-treatment features incorporated into your site must be inspected regularly. Inspection frequency for your system must be determined based on the contributing drainage area, but should never exceed one year between inspections (six months during the first year of operation).

Inspections may be required more frequently for pre-treatment systems. You should refer to the manufacturer requirements for the proper inspection schedule.

With the right equipment your inspection and measurements can be accomplished from the surface without physically entering any confined spaces. If your inspection does require confined space entry, you MUST follow all local/regional requirements as well as OSHA standards.

R-Tank Systems may incorporate Inspection Ports, Maintenance Ports, and/or adjoining manholes. Each of these features are easily accessed by removing the lid at the surface. With the cover removed, a visual inspection can be performed to identify sediment deposits within the structure. Using a flashlight, ALL access points should be examined to complete a thorough inspection.

Inspection Ports
Usually located centrally in the R-Tank System, these perforated columns are designed to give the user a base-line sediment depth across the system floor.

Maintenance Ports
Usually located near the inlet and outlet connections, you'll likely find deeper deposits of heavier sediments when compared to the Inspection Ports.

Manholes
Most systems will include at least two manholes - one at the inlet and another at the outlet. There may be more than one location where stormwater enters the system, which would result in additional manholes to inspect.

Bear in mind that these manholes often include a sump below the invert of the pipe connecting to the R-Tank. These sumps are designed to capture sediment before it reaches the R-Tank, and they should be kept clean to ensure they function properly. However, existence of sediment in the sump does NOT necessarily mean sediment has accumulated in the R-Tank.

After inspecting the bottom of the structure, use a mirror on a pole (or some other device) to check for sediment or debris in the pipe connecting to the R-Tank.

If sediment or debris is observed in any of these structures, you should determine the depth of the material. This is typically accomplished with a stadia rod, but you should determine the best way to obtain the measurement.

All observations and measurements should be recorded on an Inspection Log kept on file. We've included a form you can use at the end of this guideline.

Maintenance

The R-Tank System should be back-flushed once sediment accumulation has reached 6" or 15% of the total system height. Use the chart below as a guideline to determine the point at which maintenance is required on your system.

R-Tank Unit	Height	Max Sediment Dept
Mini	9.5"	1.5"
Single	17"	3"
Double	34"	5"
Triple	50"	6"
Quad	67"	6"
Pent	84"	6"

Before any maintenance is performed on your system, be sure to plug the outlet pipe to prevent contamination of the adjacent systems.

To back-flush the R-Tank, water is pumped into the system through the Maintenance Ports as rapidly as possible. Water should be pumped into ALL Maintenance Ports. The turbulent action of the water moving through the R-Tank will suspend sediments which may then be pumped out.

If your system includes an Outlet Structure, this will be the ideal location to pump contaminated water out of the system. However, removal of back-flush water may be accomplished through the Maintenance Ports, as well.

For systems with large footprints that would require extensive volumes of water to properly flush the system, you should consider performing your maintenance within 24 hours of a rain event. Stormwater entering the system will aid in the suspension of sediments and reduce the volume of water required to properly flush the system.

Once removed, sediment-laden water may be captured for disposal or pumped through a Dirtbag™ (if permitted by the locality).

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Step-By-Step Inspection & Maintenance Routine

1) **Inspection**
    a. Inspection Port
        i. Remove Cap
        ii. Use flashlight to detect sediment deposits
        iii. If present, measure sediment depth with stadia rod
        iv. Record results on Maintenance Log
        v. Replace Cap
    b. Maintenance Port/s
        i. Remove Cap
        ii. Use flashlight to detect sediment deposits
        iii. If present, measure sediment depth with stadia rod
        iv. Record results on Maintenance Log
        v. Replace Cap
        vi. Repeat for ALL Maintenance Ports
    c. Adjacent Manholes
        i. Remove Cover
        ii. Use flashlight to detect sediment deposits
        iii. If present, measure sediment depth with stadia rod, accounting for depth of sump (if present)
        iv. Inspect pipes connecting to R-Tank
        v. Record results on Maintenance Log
        vi. Replace Cover
        vii. Repeat for ALL Manholes that connect to the R-Tank

2) **Maintenance**
    a. Plug system outlet to prevent discharge of back-flush water
    b. Determine best location to pump out back-flush water
    c. Remove Cap from Maintenance Port
    d. Pump water as rapidly as possible (without over-topping port) into system until at least 1”
    of water covers system bottom
    e. Replace Cap
    f. Repeat at ALL Maintenance Ports
    g. Pump out back-flush water to complete back-flushing
    h. Vacuum all adjacent structures and any other structures or stormwater pre-treatment systems that require attention
    i. Sediment-laden water may be captured for disposal or pumped through a Dirtbag™.
    j. Replace any remaining Caps or Covers
    k. Record the back-flushing event in your Maintenance Log with any relevant specifics

R-Tank Maintenance Log

Site Name:_____

Location:_____

System Owner:_____

Company Responsible for Maintenance:_____

Contact:_____

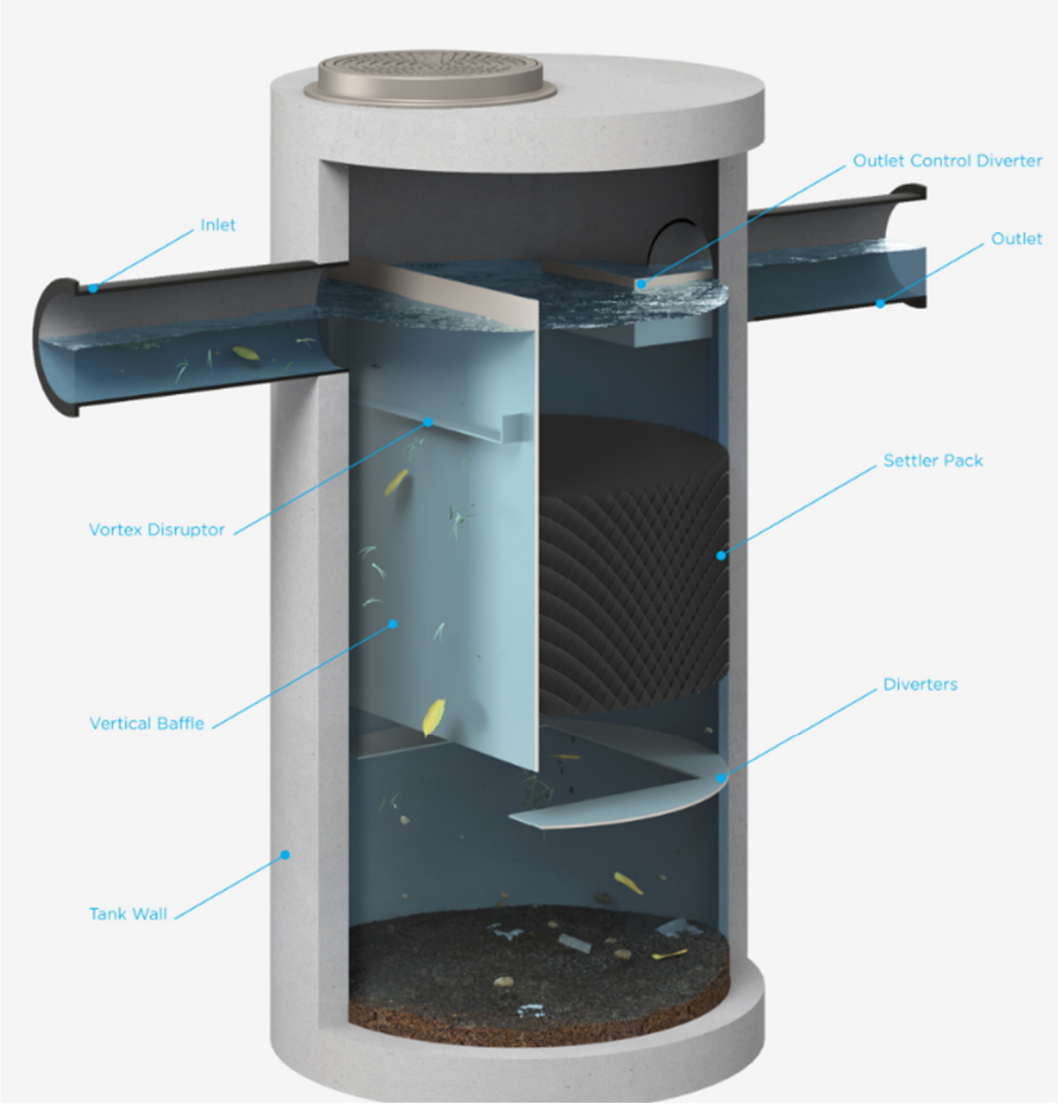
Phone Number:_____

Date	Location	Depth to Bottom	Depth to Sediment	Sediment Depth	Observations/Notes	Initials

StormTrap®

StormSettler®

StormSettler® Inspection and Maintenance Manual



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StormSettler® Manufacturer's Inspection and Maintenance Manual

The StormSettler treatment device, manufactured by StormTrap, is a hydrodynamic separating device designed to capture and store pollutants from stormwater. StormSettler's maintenance frequency is site dependent and routine inspections are recommended to ensure that the system is functioning as designed. Please contact your authorized StormTrap representative if you have questions regarding the inspection and maintenance of the StormSettler system.

Inspection Scheduling

StormSettler inspections are important to assess the condition of the system internals to ensure peak performance. The frequency of inspections and maintenance is dependent on site specific loading conditions and rainfall frequency. Within the first year of operation, it is recommended that the unit be inspected quarterly to determine the rate of pollutant accumulation in order to develop a more accurate maintenance schedule. Inspections should be performed during dry weather conditions when no flow is entering the system. StormSettler systems are recommended to be inspected whenever the upstream and downstream catch basins and stormwater pipes of the stormwater collection system are inspected or maintained. If checked on an annual basis, the inspection should be conducted before the stormwater season begins to ensure that the system is functioning properly for the upcoming storm season.

Inspection and Maintenance Equipment

The following equipment is recommended to have during inspections:

- StormSettler Inspection and Maintenance Manual and Inspection Checklist
- Flashlight

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- Manhole hook/lifter or pry bar to lift the manhole cover
- Measuring device(s) of sufficient length to reach the bottom of the device's sump
- Proper personal protective equipment
- Adequate traffic control signage
- Pole with skimmer or net (optional for maintenance procedure)
- Vacuum truck or similar trailer mounted equipment (for maintenance procedure)

Inspection Procedure

Inspections should be done such that a sufficient time has lapsed since the most recent rain event to allow for a static water condition and rainfall is not anticipated to occur during the duration of the inspection procedure. StormSettler does not require entry into the system for inspection or maintenance; however, if entering the system is deemed necessary, it is prudent to note that prior to entry into any underground storm sewer or underground structure, appropriate OSHA and local safety regulations and guidelines should be followed.

To begin the inspection process, set up the necessary traffic control signage per local ordinances. Open all manhole covers using appropriate equipment and ensure the manhole covers are in a location that would not prohibit the inspection process. Visually inspect the system at all manhole access opening locations. During the visual inspection, ensure that all components are in working order. An inspection checklist is provided within this guide for ease and reference.

If any components are not in working order, contact your authorized StormTrap representative.

After the components are inspected, visually quantify the accumulation of trash, debris, and hydrocarbons within the system by using a measuring device such as a tape measure, grade stick, dipstick, etc. Measure and record the depth of trash, debris, and hydrocarbon

accumulation from the static water elevation (pipe elevation) to the average elevation of the trash and debris.

If sorbent materials are used for retention of hydrocarbons, the level of discoloration of the sorbent material should also be noted during the inspection process.

For sediment accumulation, utilize either a sludge sampler or a sediment pole to measure and document the amount of sediment accumulation. To determine the amount of sediment in the system with a sludge sampler, follow the manufacturer's instructions. If utilizing a sediment pole or similar device, first insert the pole to the top of the sediment layer and record the depth. Then, insert the pole to the bottom of the system and record the depth. The difference in the two measurements corresponds to the amount of sediment in the system. Alternatively, sediment depth can also be determined by taking a measurement from a known and consistent elevation (manhole frame, pipe invert, vertical baffle top, etc.) to the top of the sediment layer. That distance can then be compared to the measurement between the known elevation to the sump floor. The difference between these two measurements will correspond to the sediment layer depth.

After completion of the inspection process, ensure that manhole covers are replaced and securely seated in the manhole frame and remove traffic control signage.

StormSettler units can also be installed with remote monitoring technology that measures the current capacities within the system and reports the data to any internet capable device. If a remote monitoring device is used, proper maintenance of the device, such as replacement of batteries, cleaning sensor, etc. needs to be completed to ensure functionality of the remote monitoring technology.

If it is determined during the inspection process that the accumulation of trash and debris or sediment is at or near the capacities of the StormSettler device, maintenance should be performed to ensure performance is not impacted for subsequent storm events.

Maintenance Procedure

Maintenance should be done such that a sufficient time has lapsed since the most recent rain event to allow for a static water condition and rainfall is not anticipated to occur during the duration of the maintenance procedure.

To begin the maintenance process, set up the necessary traffic control signage per local ordinances. Open all manhole covers using appropriate equipment and ensure the manhole covers are in a location that would not prohibit the maintenance process.

Visually inspect the system at all manhole access opening locations. During the visual inspection, ensure that all components are undamaged. If any components are not in working order, contact your authorized StormTrap representative.

After the components are inspected, remove all accumulated trash, debris, and hydrocarbons stored on the surface of the water using the vacuum hose or pole with attached skimmer or net.

If sorbent materials are used, the materials may have to be moved to not impact pollutant removal. If significant discoloration of the sorbent material has occurred, simply remove the sorbent materials and replace upon completion of maintenance activities.

To remove sediment, insert the vacuum truck's hose on the inlet side of the vertical baffle into the sump. The system should be completely drained, and all sediment should be removed from the sump. For smaller diameter devices (3' or 4' units), a 6" or smaller vacuum hose diameter may be required for effective cleaning due to maneuverability constraints. If the vacuum truck that is being utilized has a hose diameter greater than 6", a smaller tube can be affixed to the boom hose with duct tape to improve maneuverability within the device.

If excessive sediment or debris buildup occurs within the device, components can be washed with sewer jetting equipment or a spray lance to remove stubborn materials. Particular

attention must be taken when spraying the settler pack. A wide spray nozzle is recommended around the settler pack to ensure there is no damage to the material.

After completion of the maintenance procedure, complete a post maintenance inspection to ensure that all components are in good condition. Ensure that manhole covers are replaced and securely seated in the manhole frame and remove traffic control signage. Dispose of all pollutants removed during maintenance per local, state, and federal guidelines and regulations.

Inspection and Maintenance Documentation

Proof of inspections and maintenance activities is the responsibility of the owner. All inspection and maintenance reports and any relevant data should be kept on site or at a location where they will be accessible in accordance with local requirements. It is a good practice to take time stamped photographs after every inspection and maintenance event to include within logs. It is also good practice to keep records of rainfall events between maintenance events and the weight of material removed, even if no report is required. Some municipalities may require inspection and maintenance reports be forwarded to the proper governmental permitting agency on an annual basis. Refer to your local regulations and ordinances for any additional maintenance requirements and schedules not contained herein. Inspections and maintenance activities should be performed to ensure performance is not impacted and the device performs as designed.

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Inspection Items

- StormSettler Maintenance Manual and Inspection Checklist
- Flashlight
- Manhole hook/lifter or pry bar to lift the manhole cover
- Measuring device(s) of sufficient length to reach the bottom of the device's sump
- Proper personal protective equipment
- Adequate traffic control signage

Maintenance Items

- StormSettler Maintenance Manual and Inspection Checklist
- Flashlight
- Manhole hook/lifter or pry bar to lift the manhole cover
- Measuring device(s) of sufficient length to reach the bottom of the device's sump
- Proper personal protective equipment
- Adequate traffic control signage
- Pole with skimmer or net (optional for maintenance procedure)
- Vacuum truck or similar trailer mounted equipment (for maintenance procedure)

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StormTrap

StormSettler	StormSettler Inspection Checklist

Structure ID:		
Location/Address:		
Inspector Name:		Inspector Contact Information:
Date:	Time:	Weather Conditions:
Rain in the Last 48hrs:		If yes, list amount and timing:

*Do not enter underground chambers to inspect system unless Occupational Safety & Health Administration (OSHA) regulations for confined space entry are followed.
*Follow inspection and maintenance instructions provided by system manufacturer.
*Please circle the condition of each inspection item below. 1 being the worst and 5 being the best condition.

Inspection Item	Condition					Comment	Action Needed	
1.) Frames and Covers								
Accumulation of debris and/or sediment	1	2	3	4	5		Yes	No
Component(s) structural condition	1	2	3	4	5		Yes	No
2.) Inlet Pipe(s)								
Accumulation of debris and/or sediment	1	2	3	4	5		Yes	No
Component(s) structural condition	1	2	3	4	5		Yes	No
3.) Vortex Disruptor								
Accumulation of debris and/or sediment	1	2	3	4	5		Yes	No
Component(s) structural condition	1	2	3	4	5		Yes	No
4.) Verticle Baffle								
Accumulation of debris and/or sediment	1	2	3	4	5		Yes	No
Component(s) structural condition	1	2	3	4	5		Yes	No
5.) Enhanced Settling Pack								
Accumulation of debris and/or sediment	1	2	3	4	5		Yes	No
Component(s) structural condition	1	2	3	4	5		Yes	No
6.) Flow Modifiers								
Accumulation of debris and/or sediment	1	2	3	4	5		Yes	No
Component(s) structural condition	1	2	3	4	5		Yes	No

7.) Outlet Control Diverter								
Excessive accumulation of debris and/or sediment present	1	2	3	4	5		Yes	No
Component(s) structurally sound	1	2	3	4	5		Yes	No
8.) Outlet Pipe								
Accumulation of debris and/or sediment	1	2	3	4	5		Yes	No
Component(s) structurally sound	1	2	3	4	5		Yes	No
9.) Concrete Chamber								
Component(s) structural condition	1	2	3	4	5		Yes	No
10.) Sediment Storage Capacity								
Sediment storage capacity	1	2	3	4	5		Yes	No
Additional Notes:								
Wet Weather Inspection Needed:			Yes		No			
Maintenance Activities Needed:			Yes		No			

Stormwater BMP Maintenance Log

BMP Structure	Inspector	Date	Work Performed	Comments
Pavement Sweeping				
Vegetated Slopes				
Grass Swales				
Catch Basins/Area Drains				
Diversion Structures				
Riprap Sediment Forebay				
Hydrodynamic Separators				
Bioretention Basin 1				
Bioretention Basin 2				
Bioretention Basin 3				
Subsurface Sand Filter 1				
Subsurface Sand Filter 2				
Subsurface Sand Filter 3				
Subsurface Sand Filter 4				
Subsurface Sand Filter 5				
Subsurface Sand Filter 6				
Outlet Control Structures				
Stormwater Outfalls				
Other				
Additional Comments:				

APPENDIX B: STORMWATER QUALITY CALCULATIONS

Woodard & Curran
12 MOUNTFORT STREET
PORTLAND, MAINE 04101

CLIENT: IDEALS
PROJECT: Phase 1 Development
CALCS BY: AL/LS
DATE: 3/26/2024
PROJECT NO.: 233482.00

Redevelopment Treatment Calculations - Per Section 4.C.2.d of the MaineDEP Chapter 500 Rules

Area of Redevelopment (acres) = 14.50

a. Existing Pollutant Impact

Land Use	Pollutant Ranking	Land Area (Ac.)	Impact
High Use Roads/Parking Lot	5	0.00	0.00
Other Roads/Medium Use Parking Lot	4	2.44	9.74
Other Parking Lots/Flat Asphalt Roofs/Industrial Roofs	3	6.35	19.04
Other Roofs/Landscaped Area/Paved Walkway	2	4.73	9.46
Non-grass Landscaping/Stormwater	1	0.98	0.98
Forest/Meadow	0	0.00	0.00
			39.23

b. Proposed Pollutant Impact

Land Use	Pollutant Ranking	Land Area (Ac.)	Impact
High Use Roads/Parking Lot	5	1.30	6.48
Other Roads/Medium Use Parking Lot	4	0.94	3.77
Other Parking Lots/Flat Asphalt Roofs/Industrial Roofs	3	0.17	0.50
Other Roofs/Landscaped Area/Paved Walkway	2	11.43	22.86
Non-grass Landscaping/Stormwater	1	0.65	0.65
Forest/Meadow	0	0.00	0.00
			34.26

c. Existing Impact/Total Redevelopment Acres

2.706

d. Proposed Impact/Total Redevelopment Acres

2.363

e. Item D Minus Item C

-0.34

Ranked Impact Change Due to Redevelopment	Percentage of Developed Area that Must be Treated
0.0 or less	0% (Stormwater projects)
	50% (Site projects)
≥ 0.0 to ≤ 1.0	60%
> 1.0 to ≤ 2.0	70%
> 2.0 to ≤ 3.0	80%
> 3.0	Same treatment level as for new development

Stormwater Treatment Summary	*Treatment Percentage*	*Treated Area (SF)*
Required	50.0%	315,749
Provided	50.9%	321,423

WQV Summary	*Subsurface Sand Filter 1*	*Subsurface Sand Filter 2*	*Subsurface Sand Filter 3*	*Subsurface Sand Filter 4*	*Subsurface Sand Filter 5*
Proposed Treated Area (SF)	48,800	49,527	86,298	7,107	46,958
WQV Required (CF)	4,067	3,283	6,194	549	3,013
WQV Provided (CF)	6,988	5,447	10,789	1,086	4,718

WQV Summary	*Subsurface Sand Filter 6*	*Bioretention Basin 1**	*Bioretention Basin 2*	*Bioretention Basin 3*
Proposed Treated Area (SF)	12,500	21,684	28,165	20,384
WQV Required (CF)	1,042	1,009	1,118	913
WQV Provided (CF)	1,798	1,009	1,170	917
**Bioretention Basin 1 volume is fixed by site constraints; proposed treated area is calculated based on the fixed basin volume*				

Redevelopment Treatment Calculations - Per Section 5 of the City of Portland Technical Manual

Area of non-roof, redeveloped impervious surface (acres) = 5.12

Area of non-roof, redeveloped impervious surface treated (acres) = 3.06 60% > 50% required

12 MOUNTFORT STREET
PORTLAND, MAINE 04101

CLIENT: IDEALS
PROJECT: Phase 1 Development
CALCS BY: AL/LS
DATE: 3/26/2024
PROJECT NO.: 233482.00

Sizing Calculations

Water Quality Volume for Subsurface System 1

WQV = (1" * Impervious Area) + (0.4" * Pervious Area)

Impervious Area =	48800	SF
Pervious Area =	0	SF
WQV Required =	**4067**	CF
WQV Provided =	**6988**	CF

Surface Area = (5%*Impervious Area) + (2%*Pervious Area)

Filter Surface Area Required=	**2440**	SF
Filter Surface Area Provided=	**2993**	SF

Sediment Pre-treatment = (55.6 CF/Acre) * (acres of non-roof impervious)

Non-Roof Impervious Area (total) =	0	SF
Total Volume Required =	**0**	CF
Method: Hydrodynamic Separator, Riprap Sediment Forebay and Pretreatment Row		
Total Volume Provided =	**68**	CF

Water Quality Volume for Subsurface System 2

WQV = (1" * Impervious Area) + (0.4" * Pervious Area)

Impervious Area =	32649	SF
Pervious Area =	16878	SF
WQV Required =	**3283**	CF
WQV Provided =	**5447**	CF

Surface Area = (5%*Impervious Area) + (2%*Pervious Area)

Filter Surface Area Required=	**1970**	SF
Filter Surface Area Provided=	**2621**	SF

Sediment Pre-treatment = (55.6 CF/Acre) * (acres of non-roof impervious)

Non-Roof Impervious Area (total) =	32649	SF
Total Volume Required =	**42**	CF
Method: Pretreatment Row		
Total Volume Provided =	**42**	CF

Water Quality Volume for Subsurface System 3

WQV = (1" * Impervious Area) + (0.4" * Pervious Area)

Impervious Area =	66338	SF
Pervious Area =	19960	SF
WQV Required =	**6194**	CF
WQV Provided =	**10789**	CF

Surface Area = (5%*Impervious Area) + (2%*Pervious Area)

Filter Surface Area Required=	**3716**	SF
Filter Surface Area Provided=	**4640**	SF

Sediment Pre-treatment = (55.6 CF/Acre) * (acres of non-roof impervious)

Non-Roof Impervious Area (total) =	66338	SF
Total Volume Required =	**85**	CF
Method: Hydrodynamic Separator and Pretreatment Rows		
Total Volume Provided =	**109**	CF

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Sizing Calculations (cont.)

Water Quality Volume for Subsurface System 4

WQV = (1" * Impervious Area) + (0.4" * Pervious Area)

Impervious Area =	6251	SF
Pervious Area =	856	SF
WQV Required =	**549**	CF
WQV Provided =	**1086**	CF

Surface Area = (5%*Impervious Area) + (2%*Pervious Area)

Filter Surface Area Required=	**330**	SF
Filter Surface Area Provided=	**505**	SF

Sediment Pre-treatment = (55.6 CF/Acre) * (acres of non-roof impervious)

Non-Roof Impervious Area (total) =	2241	SF
Total Volume Required =	**3**	CF
Method: Pretreatment Row		
Total Volume Provided =	**8**	CF

Water Quality Volume for Subsurface System 5

WQV = (1" * Impervious Area) + (0.4" * Pervious Area)

Impervious Area =	28964	SF
Pervious Area =	17995	SF
WQV Required =	**3013**	CF
WQV Provided =	**4718**	CF

Surface Area = (5%*Impervious Area) + (2%*Pervious Area)

Filter Surface Area Required=	**1808**	SF
Filter Surface Area Provided=	**2194**	SF

Sediment Pre-treatment = (55.6 CF/Acre) * (acres of non-roof impervious)

Non-Roof Impervious Area (total) =	14891.86	SF
Total Volume Required =	**19**	CF
Method: Pretreatment Row		
Total Volume Provided =	**63**	CF

Water Quality Volume for Subsurface System 6

WQV = (1" * Impervious Area) + (0.4" * Pervious Area)

Impervious Area =	12500	SF
Pervious Area =	0	SF
WQV Required =	**1042**	CF
WQV Provided =	**1798**	CF

Surface Area = (5%*Impervious Area) + (2%*Pervious Area)

Filter Surface Area Required=	**625**	SF
Filter Surface Area Provided=	**879**	SF

Sediment Pre-treatment = (55.6 CF/Acre) * (acres of non-roof impervious)

Non-Roof Impervious Area (total) =	0	SF
Total Volume Required =	**0**	CF
Method: Pretreatment Row		
Total Volume Provided =	**21**	CF

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DATE: 3/26/2024
PROJECT NO.: 233482.00

Sizing Calculations (cont.)

Bioretention Basin 1 - Per Ch. 7.2 Vol. III MaineDEP Stormwater BMP Manual

WQV = (1" * Impervious Area) + (0.4" * Pervious Area)

Impervious Area* =	5726	SF	
Pervious Area* =	15957	SF	
Sum* =	0.50	ac.	< 1 ac.
WQV Required* =	**1009**	CF	
WQV Depth =	6	in	</=6"
Soil Filter Void Space =	40	%	
WQV Storage (Ponding) =	721	CF	
WQV Storage (Soil)* =	288	CF	
WQV Storage (TOTAL) =	**1009**	CF	

**Bioretention Basin 1 volume is fixed by site constraints; proposed treated area is calculated based on the fixed basin volume.*

Surface Area = (7%*Impervious Area) + (3%*Pervious Area)

Filter Surface Area Required (Total)=	**880**	SF	
Filter Surface Area Provided =	**1442**	SF	<2,000 SF

Sediment Pre-treatment = (55.6 CF/Acre) * (acres of non-roof impervious)

Non-Roof Impervious Area (total) =	8864	SF	
Total Volume Required =	11	CF	
Method: Grass Swale			

Bioretention Basin 2 - Per Ch. 7.2 Vol. III MaineDEP Stormwater BMP Manual

WQV = (1" * Impervious Area) + (0.4" * Pervious Area)

Impervious Area =	3590	SF	
Pervious Area =	24575	SF	
Sum =	0.65	ac.	< 1 ac.
WQV Required =	**1118**	CF	
WQV Depth =	6	in	</=6"
Soil Filter Void Space =	40	%	
WQV Storage (Ponding) =	836	CF	
WQV Storage (Soil)* =	334	CF	
WQV Storage (TOTAL) =	**1170**	CF	

Surface Area = (7%*Impervious Area) + (3%*Pervious Area)

Filter Surface Area Required (Total)=	**989**	SF	
Filter Surface Area Provided =	**1672**	SF	<2,000 SF

Sediment Pre-treatment = (55.6 CF/Acre) * (acres of non-roof impervious)

Non-Roof Impervious Area (total) =	3590	SF	
Total Volume Required =	5	CF	
Method: Grass Swale			

Woodard & Curran
12 MOUNTFORT STREET
PORTLAND, MAINE 04101

CLIENT: IDEALS
PROJECT: Phase 1 Development
CALCS BY: AL/LS
DATE: 3/26/2024
PROJECT NO.: 233482.00

Sizing Calculations (cont.)

Bioretention Basin 3 - Per Ch. 7.2 Vol. III MaineDEP Stormwater BMP Manual

WQV = (1" * Impervious Area) + (0.4" * Pervious Area)

Impervious Area =	4672	SF	
Pervious Area =	15712	SF	
Sum =	0.47	ac.	< 1 ac.
WQV Required =	**913**	CF	
WQV Depth =	6	in	</=6"
Soil Filter Void Space =	40	%	
WQV Storage (Ponding) =	655	CF	
WQV Storage (Soil)* =	262	CF	
WQV Storage (TOTAL) =	**917**	CF	

Surface Area = (7%*Impervious Area) + (3%*Pervious Area)

Filter Surface Area Required (Total)=	**798**	SF	
Filter Surface Area Provided =	**1310**	SF	<2,000 SF

Sediment Pre-treatment = (55.6 CF/Acre) * (acres of non-roof impervious)

Non-Roof Impervious Area (total) =	4672	SF
Total Volume Required =	6	CF
Method: Grass Swale		

APPENDIX C: FIGURES



IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

Woodard & Curran

LAND-USE PERMIT SET

NOT FOR CONSTRUCTION

Number	Revision	Date

Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	26 MARCH 2024
Scale	1"=40'

Drawing Title

EXISTING SITE IMPACT ANALYSIS

FIG. A

MATCHLINE

REDEVELOPMENT AREA

MATCHLINE

REDEVELOPMENT AREA

LEGEND

- POLLUTANT RANKING 5
- POLLUTANT RANKING 4
- POLLUTANT RANKING 3
- POLLUTANT RANKING 2
- POLLUTANT RANKING 1
- POLLUTANT RANKING 0

40' 0 40' 80'
BAR SCALE
1" = 40'
CHECK GRAPHIC SCALE BEFORE USING

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
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Designed By	ANL
Checked	DLC
Date	26 MARCH 2024
Scale	1"=40'

Drawing Title

PROPOSED SITE IMPACT ANALYSIS

FIG. B

MATCHLINE

REDEVELOPMENT AREA

MATCHLINE

TREATMENT AREA, TYP.

REDEVELOPMENT AREA

BAR SCALE
1" = 40'
CHECK GRAPHIC SCALE BEFORE USING

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

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Date	26 MARCH 2024
Scale	1"=40'

Drawing Title

REDEVELOPMENT FIGURE

FIG. C

MATCHLINE

MATCHLINE

SF1
SF2
SF3
SF4
SF5
SF6
BR1
BR2
BR3

TREATMENT AREA LEGEND

STORMWATER TREATMENT SYSTEM	LOCATION	DRAINAGE AREA
SAND FILTER #1	SF1	
SAND FILTER #2	SF2	
SAND FILTER #3	SF3	
SAND FILTER #4	SF4	
SAND FILTER #5	SF5	
SAND FILTER #6	SF6	
BIORETENTION #1	BR1	
BIORETENTION #2	BR2	
BIORETENTION #3	BR3	

40' 0 40' 80'
BAR SCALE
1" = 40'
CHECK GRAPHIC SCALE BEFORE USING

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

The Roux Institute

CambridgeSeven
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1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

Woodard & Curran

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Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	26 MARCH 2024
Scale	1"=40'

Drawing Title

TREATMENT AREA FIGURE

FIG. D

APPENDIX D: MANUFACTURER DESIGN REVIEW LETTER

Ferguson Waterworks
94 Pleasant Ave
South Portland, ME 04106

Amy Lebel, PE.
Project Engineer
Woodard & Curran
12 Mountfort Street
Portland, ME 04101

March 25, 2024

SUBJECT: IDEALS Roux Campus – Portland, ME
R-Tank - Plan Review and Construction Oversight Commitment

Dear Amy,

Thank you for forwarding the permit plans for the IDEALS Roux Campus in Portland, ME to Ferguson Waterworks for review of the proposed sand filter systems with R-Tank modules.

Our team has reviewed the "Overall grading & drainage plan" with the latest revision on March 14th 2024, which identifies six R-Tank systems also utilizing sand filters beneath the R-Tank units. The systems consist of the following:

- Sand Filter 1: 659 R-Tank^{HD} Single+Mini modules, 132 R-Tank^{HD} Single+Mini Access modules
- Sand Filter 2: 570 R-Tank^{HD} Single+Mini modules, 82 R-Tank^{HD} Single+Mini Access modules
- Sand Filter 3: 1002 R-Tank^{HD} Single+Mini modules, 212 R-Tank^{HD} Single+Mini Access modules
- Sand Filter 4: 93 R-Tank^{HD} Single+Mini modules, 15 R-Tank^{HD} Single+Mini Access modules
- Sand Filter 5: 467 R-Tank^{HD} Single+Mini modules, 122 R-Tank^{HD} Single+Mini Access modules
- Sand Filter 6: 171 R-Tank^{HD} Single+Mini modules, 40 R-Tank^{HD} Single+Mini Access modules

Per Maine DEP regulations, the systems appear to be sized appropriately to the minimum Sand Filter sizing requirements according to the impervious and pervious area each system is responsible for treating.

Each R-Tank system includes a Treatment Row at each inflow point to accommodate the flow rate for the 1yr 24hr storm event. It is recommended that the Treatment Row sizing is

reviewed to ensure the proper number of R-Tank units has been provided at each inlet location (accounting for 0.02 cfs per module per DEP regulations).

Sand Filters 1, 3 & 4 – R-Tanks are designed with the typical 3" stone base, 2 ft stone sides, and a sectional build-up over the system that meets the min. cover guidance for R-Tank^{HD} systems designed in traffic loaded locations. Min. cover requirement for these systems are 20" total cover (includes 12" on top of the tanks). The cover over the system fits within the allowable cover limits.

Sand Filters 2, 5 & 6 – R-Tanks are designed with the typical 3" stone base, 2 ft sides, and a sectional build-up over the system that meets the min. cover guidance for R-Tank^{HD} systems designed for greenspace areas and non-vehicular traffic locations. Min. cover requirements for pedestrian load rated systems only are 12" total cover (includes 6" stone on top of the tanks). The cover over the system fits within the allowable cover limits.

The tanks are to be wrapped with an N080 Non-woven geotextile fabric and the excavation is to be wrapped with 30 mil pvc liner between two layers of N080 non-woven geotextile. Additional separation fabrics are to be used between each layer transition. See Ferguson layout sheets, or engineer plans, for more specific information as to which fabrics should be placed in between each layer.

An appropriate number of inspection ports have been provided.

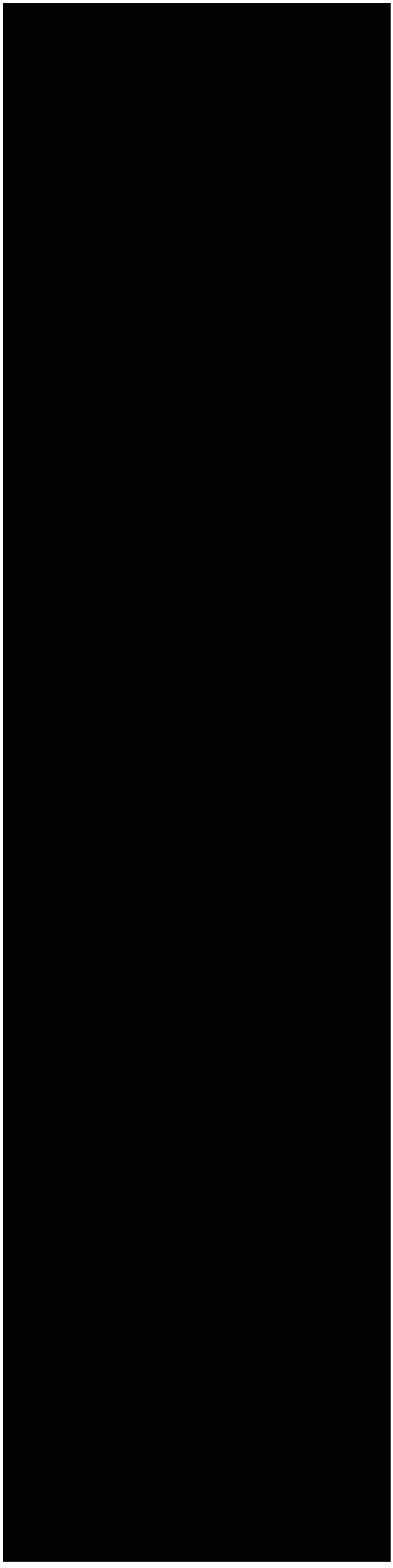
Overall, Ferguson takes no exceptions to the current location and application of the R-Tank system for this project.

With regard to the installation, Ferguson will host a preconstruction meeting with the site contractor and will visit the site several times during the installation to ensure the installation is being conducted in accordance with our standard installation procedures and specifications.

Please review and contact me with any questions from your office. We look forward to working with you on this project.

Sincerely,
Brett Keszczyk,
Green Stormwater Infrastructure (GSI) Engineer
Ferguson Waterworks

Cc: Rob Woodman, PE – Director of Engineering & Green Stormwater Infrastructure
Maggie Chase, PE – Green Stormwater Infrastructure Specialist (New England)



Woodard & Curran

woodardcurran.com

Department of Public Works
Mike Murray
Director

Date: December 12, 2023
Re: Wastewater Capacity Authorization
Address: 1 Bean Pot Circle
Applicant: Northeastern University
Planner: Zachary Powell

The City of Portland has been asked to provide a preliminary review of wastewater capacity for the future Roux Institute development.

Woodard & Curran provided the attached schedule of proposed buildings and phase breakout for review. Not listed on the table is the removal of the historical wastewater production of the previous occupant (B&M) which Woodard & Curran documented in a letter at 90,000 GPD.

The Department of Public Works, which includes the Water Resource Division, has reviewed and determined that the downstream sewers from the project site have the capacity to convey the estimated dry weather wastewater flows which will be generated from this development.

However, as each individual phase undergoes permitting/ planning review, we would ask for a wastewater capacity application specific to that phase of development be submitted for further review.

You are reminded that new connections into the combined sewer system shall be equipped with backflow prevention in accordance with Section 2.6.10 of the City's Technical Manual.

If the City can be of further assistance, please contact me at 207-874-8840 or brad@portlandmaine.gov

Sincerely,

Bradley A. Roland, P.E.,
Senior Project Engineer

Att. M

ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY

Site Location of Development

1 Bean Pot Circle
Portland, ME

Prepared for
Initiative for Digital Engineering and Life Sciences (IDEALS)
November 2023

12 Mountfort Street
Floors 5 & 6
Portland, ME 04101
800.426.4262

woodardcurran.com

TABLE OF CONTENTS

SECTION		PAGE NO.
1.	**DEVELOPMENT DESCRIPTION**	**1-1**
1.1	Objectives & Details	1-1
1.2	Existing Facilities	1-2
1.3	Topographic Map	1-2
1.4	Construction Plan	1-2
1.5	Drawings	1-3
1.6	List of Attachments	1-3
2.	**TITLE, RIGHT, OR INTEREST**	**2-1**
2.1	Right, Title & Interest	2-1
2.2	Easements & other Burdens	2-1
2.3	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**
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 report is in support of a Site Location of Development (SLOD) Permit Application on behalf of Northeastern University (Applicant) and their agent, Initiative for Digital Engineering and Life Sciences (IDEALS), for development of the Roux Institute at Northeastern University campus located at 1 Bean Pot Circle in Portland, Maine (the Site). A letter authorizing IDEALS and Woodard & Curran to act as the agent on behalf of the Applicant is attached to this Section. It is our understanding that the MaineDEP has determined that the City of Portland has delegated review authority over this project.

1.1 OBJECTIVES & DETAILS

The proposed development is the first of multiple phases of the Roux Institute at Northeastern University Campus. As noted in the Site Plan Application, the Applicant developed a long-range plan for the institution, known as an Institutional Development Plan (IDP), as part of the Institutional Overlay Zone (IOZ) designation process for the campus. The City of Portland Planning Board approved the Roux Campus IDP on November 22, 2022, and the Portland City Council subsequently and unanimously approved the zoning map and text amendments to establish the IOZ regulatory framework and change the underlying zone to B-5 Mixed-Use Business on February 6, 2023.

Phase 1 includes construction of a Learning, Research, and Collaboration Building, renovation of the Bean Building to create business incubator space, construction of a parking garage, development of a childcare facility, replacement of the pier, development of a coastal path, and other site improvements. Meaningful public open space will be established in this first phase to ensure public access to this signature waterfront amenity. The area of disturbance for development of Phase 1 and reconstruction of Sherwood Street is approximately 14.5-acres and will include approximately 7.3-acres of impervious area. It should be noted that roof areas were considered fully impervious (as any rooftop landscaping systems do not infiltrate into the ground), and significant areas of landscaping and green roof are proposed.

The proposed Phase 1 project is designed with consideration to future development, with the interior-most and waterfront spaces being developed first to reduce impacts of construction of future phases. Likewise, the site utilities are designed with consideration and capacity for full build-out of the Site to minimize future construction impacts and enable utility access to occupied buildings during construction of future phases.

In addition to the SLOD permit, the proposed work requires the following permits:

- City of Portland Major Site Plan;
- City of Portland Historic Preservation Application for Certificate of Appropriateness;
- City of Portland Flood Hazard Development Permit;
- Portland Harbor Commissioners Marine Construction Permit;
- Maine DOT Traffic Movement Permit (TMP);

- Maine DEP NRPA Individual Permit;
- Army Corps of Engineers General Permit; and
- FAA Notice of Proposed Construction.

1.2 EXISTING FACILITIES

The Site is located within Portland's East Deering neighborhood, at the end of Sherwood Street, adjacent to Maine Yacht Services and near a residential area of single and multi-family homes (three-story apartment buildings) and a commercial node featuring restaurants, bars, automobile mechanics, and offices. While proximate to these areas, the Site is remarkably buffered; I-295 to the west, state-owned vacant parcels to the north, a disused rail corridor and marine business to the east, and Casco Bay to the south collectively surround the property.

The Site includes approximately 13 acres above mean higher high water (MHHW) line as well as an adjacent 11 acres of submerged lands. A survey of the Site was completed by VHB, Inc. (dated June 30, 2021 and July 17, 2023). Approximately 9 acres of land above the mean higher high water line are impervious (paved areas, building roofs, foundations, etc.). The remaining 4 acres of permeable area include lawn and approximately half an acre of vegetated non-lawn area adjacent to the rail corridor abutting the site to the east. No stormwater treatment systems exist on the Site.

The Site was occupied by residences and a lobster cannery prior to 1913, when Burnham & Morrill (B&M) relocated its food manufacturing operations to the Site from Franklin Street. Shortly thereafter, the flagship cannery building (Bean Building) was constructed, as well as the adjacent codfish building on the pier. The site was further improved with buildings and parking to support operations. Due to its industrial use, the site is surrounded by security fencing, and the interior and waterfront have historically been inaccessible to the public. Canning operations ceased in 2021.

On May 23, 2023, IDEALS received a demolition permit from the City, and commenced demolition of all existing buildings on the site, retaining only the Bean Building and the Codfish Building.

1.3 TOPOGRAPHIC MAP

A USGS topographic map showing the approximate location of the proposed development is attached to this Section for your reference. The proposed development is located within the Portland West Quadrangle.

1.4 CONSTRUCTION PLAN

The proposed development will be constructed in phases. Construction of Phase 1 is anticipated to begin in Spring 2024. Erosion and sediment control measures will be installed prior to any ground disturbing activities, as described in Section 14 of this Report. The Contractor will be required to provide a construction management plan for the project, subject to the review and approval of the City and Engineer.

The Site will be managed during construction to minimize impacts to the adjacent land uses. Maintaining access to adjacent properties and public facilities will be a priority. Traffic impacts to adjacent roadways, including Sherwood Street and Veranda Street, will be minimized during construction to the greatest extent possible. Traffic controls will consist of temporary signage and barriers where necessary to manage vehicle, pedestrian, and bicycle traffic and direct it safely around the construction area. Work affecting traffic circulation such as underground utility work and grading activities will be conducted during periods of low traffic to reduce potential impacts.

Below is the anticipated sequence of construction activities for major aspects of the development:

- Installation of erosion and sediment control measures and traffic control measures;
- Demolition and site preparation activities;
- Construction of utilities, stormwater management system, and roadway;
- Construction of buildings;
- Installation of landscaping and final surface materials; and
- Removal of erosion and sediment control measures.

1.5 DRAWINGS

Design drawings showing the proposed development are uploaded separately to ProjectDox.

1.6 LIST OF ATTACHMENTS

The following documents are attached to this Section:

- Agent Letter;
- Topographic Map; and
- Design Drawings (uploaded separately to ProjectDox).

Northeastern

October 25, 2023

Sam Reiche
Chief Operating Officer and Head of Real Estate
Initiative for Digital Engineering and Life Sciences (IDEALS)
100 Commercial Street, Suite 40
Portland, Maine 04101

Dear Sam:

Northeastern University is preparing plans for the first phase of development at the Roux Institute, located at 1 Bean Pot Circle in Portland Maine. Northeastern University is authorizing the Initiative for Digital Engineering and Life Sciences (IDEALS) and Woodard & Curran, Inc., to assist in the preparation of land-use permit applications for this project. IDEALS and Woodard & Curran are authorized as our agent to represent Northeastern University in addressing questions on the plans and applications for this project.

Sincerely,

Thomas E. Nedell,
Senior Vice President for Finance and Treasurer

Office of the Senior Vice President Finance

177 Huntington Ave.
360 Huntington Ave.
Boston, MA 02115

617.373.2240
fax 617.373.4728

finance.northeastern.edu



Woodard & Curran	Client Info: IDEALS ROUX INSTITUTE PHASE 1 1 BEAN POT CIRCLE PORTLAND, ME 04103	Job No: 0233482.00 Date: SEPT 2023 Scale: 1" = 24,000' Des by: JM Drn by: JM Chk by: AL	Drawing Title SITE LOCATION MAP	Drawing Number 0233482.00 Location Map

2. TITLE, RIGHT, OR INTEREST

2.1 RIGHT, TITLE & INTEREST

The Project will occur on parcels of land identified by the City as Map 447 Lot A001 and Lot A002 and owned by IDEALS. IDEALS is in the process of transferring ownership of the parcel to Northeastern University, as documented by the Purchase and Sale Agreement attached to this Section. Conveyance of the property to Northeastern University will occur subsequent to site plan approval and prior to application for a building permit. A copy of the City parcel maps is also attached for reference.

2.2 EASEMENTS & OTHER BURDENS

Existing easement's locations and descriptions are reflected on the survey drawings, uploaded under separate cover.

2.3 LIST OF ATTACHMENTS

- Purchase and Sale Agreement; and
- City Parcel Maps.

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EXECUTION VERSION

AGREEMENT FOR THE PURCHASE AND SALE OF REAL ESTATE

THIS AGREEMENT is effective as of October 23, 2023 by and between **NORTHEASTERN UNIVERSITY**, a Massachusetts non-profit corporation with an address of 360 Huntington Avenue, Boston, Massachusetts 02115 ("Buyer"), and **THE INITIATIVE FOR DIGITAL ENGINEERING AND LIFE SCIENCES**, a Maine non-profit corporation with an address of 100 Commercial Street, Portland, Maine 04101 ("Seller").

RECITALS

WHEREAS, in furtherance and fulfillment of that certain Memorandum of Understanding, dated July 27, 2022 by and between Buyer and Seller (the "MOU"), the Seller desires to sell, transfer and convey to Buyer a certain parcel of land, together with the improvements thereon, located on the easterly side of Interstate 295 and the southerly side of Sherwood Street in the City of Portland, County of Cumberland and State of Maine (the "Campus") as more specifically described herein; and

WHEREAS, the MOU and further agreements by and among Buyer, Seller, and David and Barbara Roux (the "Rouxs") envision that Buyer will develop the Campus for the creation of a graduate institute (the "Institute"):

- instructing students in the fields of artificial intelligence, digital science, data visualization, computational medicine, genomics and life sciences and project management, and develop content and pedagogy therefor,
- conducting research in the fields described above, among others, and
- encouraging innovation and entrepreneurialism among new and established companies deploying the above-mentioned skills and technologies,

WHEREAS, the buyer has agreed to develop the Campus as the permanent home of the Institute with other supporting infrastructure to encourage learning, collaboration, innovation and other progress, and

WHEREAS, it is the intent of the Seller and the Rouxs that the Campus will, over time, become a force for education, research, collaboration and entrepreneurialism meaningful to the 21st century economy, innovation and job creation.

WITNESSETH AS FOLLOWS:

1. PURCHASE AND SALE. Seller agrees to sell and Buyer agrees to buy, on the terms and conditions hereinafter set forth, approximately thirteen (13) acres of land and buildings generally situated at 1 Bean Pot Circle, Portland, Maine together with all improvements that may at the time of closing be thereon (except as specified below) and all rights and easements appurtenant thereto, which parcel is more particularly bounded and referenced by the City of Portland Assessor's Office as Map 447-A-001-001 and 447-A-001-002 and as more fully described on **Exhibit A** attached hereto, being the same premises described in a Quitclaim Deed

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with Covenant from B&G Foods North America, Inc. to Seller, dated March 23, 2022 and recorded in the Cumberland County Registry of Deeds in Book 39282, Page 151 together with and including all abutting or adjacent tidal flats, intertidal lands, and related rights in, to and under any submerged lands easements or leases between Seller and/or any predecessor of Seller with the State of Maine (together the "Property"). The following shall also be delivered and conveyed to Buyer at Closing hereunder:

A. Conveyance of tangible personal property, if any via Bill of Sale.

B. Conveyance of intangible personal property, if any, associated with the Property, to the extent owned by Seller, by Bill of Sale and Assignment.

C. Assignment and Assumption of the Maine Yacht Center lease (the "MYC Lease") of a portion of the Property, in form and substance reasonably acceptable to Buyer.

D. Conveyance/Assignment and Assumption of Submerged Land Easement, which requires notice to the Maine State Bureau of Parks and Lands.

E. Assignment and Assumption of the following MDEP Permits if in effect at the time (for which Buyer shall seek MDEP consent):

i. Maine Department of Environmental Protection Air Emission License A-77-71-M-R(SM)

ii. Maine Department of Environmental Protection Maine Pollutant Discharge Elimination System (MDEPDES) Permit #ME0001741

iii. Maine Waste Discharge License (WDL) License #W000980-5R-H-R.

iv. NRPA Permit (*if any, currently in process*)

(collectively, the "MDEP Permits")

F. Assignment and Assumption of the following City of Portland and/or State permits and approvals:

i. Demolition permit

ii. Any site plan approval and/or building or construction permits

iii. MDOT permits including Traffic Movement Permit

iv. any other issued or pending state, municipal or federal permits or permit applications

(collectively, with the MDEP Permits, the "Governmental Permits")

G. Assignment and Assumption of the construction and development contracts and agreements described on **Exhibit B** (the "Development Contracts").

H. Assignment of any and all warranties relating to any completed contracts for construction or demolition of any of the improvements upon the Campus (the "Construction Warranties"), if any.

I. Assignment of any and all studies, reports, engineering, surveys, appraisals, or other such reports or studies, to the extent assignable (collectively, the "Studies and Reports"), and, if and to the extent requested by Buyer, delivery of reliance letters with respect to such Studies and Reports in a form reasonably acceptable to Buyer. Seller agrees to seek consent to such assignments and any required reliance letters from the professionals or vendors providing the Studies and Reports.

2. OFFER AND ACCEPTANCE. The execution of this Agreement by Buyer represents an offer to Seller on the terms and conditions set forth herein. This offer shall be open for acceptance by Seller until 4:00 p.m. Portland, Maine time on October 23, 2023 unless extended by mutual agreement of Buyer and Seller. Seller's acceptance of this offer shall be evidenced by Seller delivering an executed copy of this Agreement to Buyer at the address set forth in Section 14 below on or before the expiration of this offer. If this offer is not accepted by Seller prior to its expiration, this offer shall automatically expire and this Agreement shall be null and void and of no further force and effect.

3. CONSIDERATION. The consideration for the transfer of the Property is in furtherance and fulfillment of the MOU and the performance under such further agreements by and among Buyer and Seller for Buyer's development of the Property as the site of the Institute for the purposes of instructing students, conducting research, and supporting entrepreneurialism in the fields of artificial intelligence, digital science, data visualization, computational medicine, genomics and life sciences and project management, and develop content and pedagogy therefor, and developing the Property to serve as the permanent home of the Institute with other supporting infrastructure. At closing hereunder, however, the parties shall adjust for any pro-rations and any other payments referenced herein. Except as specified in this Agreement or in any other agreement among the parties including the Rouxs, both Buyer and Seller shall bear their own expenses in connection with the performance of their obligations hereunder. Buyer agrees to pay and Seller agrees to accept One Dollar ($1.00) and other valuable consideration as the Purchase Price for the Property.

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[redacted]

4. TITLE. Seller shall convey the Property to Buyer at the closing in fee simple with good, marketable and insurable title, free and clear of liens and encumbrances and other matters of record, except as disclosed in Buyer's Title Insurance Policy # OP 04921177 ME issued by CATIC (the "Title Insurer"), dated March 24, 2022, a copy of which has been provided to Seller (the "Title Policy"). Seller shall deliver the Property free and clear of any leases or occupancies except as otherwise provided herein. Notwithstanding the foregoing, during the period commencing on the date hereof and continuing for a period of thirty (30 days (the "Inspection Period"), Buyer shall have right to review the title and to make any objections to the title in writing to Seller. Upon receipt of Buyer's title objections, Seller shall have a period of up to thirty (30) days to either (i) resolve the title objections to the reasonable satisfaction of Buyer; (ii) or to propose affirmative title insurance coverage addressing any such title objection that the Title Insurer is willing to provide, including an agreement to continue to provide such affirmative coverage to subsequent grantees and mortgagees; or (iii) to refuse to address such title objection, in which case Buyer may elect to terminate this Agreement, or Buyer may elect to close notwithstanding the title objection.

5. CLOSING. The transfer of title and closing hereunder shall take place at the offices of Bernstein, Shur, Sawyer and Nelson, 100 Middle Street, Portland, Maine, no later than ten days prior to Buyer's application for a building permit for the Buyer's initial phase of construction of the Institute is submitted to the City of Portland (the "Closing Date") or at such earlier date and location as Buyer and Seller shall mutually agree in advance and in writing. Buyer shall have the right to request a closing at any time prior to its application for a building permit, provided that Buyer has satisfied the remaining obligations of Buyer under this Agreement, other than such obligations that Seller has agreed to waive in writing. At the closing,

(a) Seller shall execute and/or deliver to Buyer:

i. a Quitclaim Deed with Covenant to the Property, in accordance with the Short Form Deeds Act, 33 M.R.S.A. § 761 et seq., (the "Deed"),

ii. a Quitclaim with Covenant Bill of Sale conveying the personal property to be conveyed to Buyer as set forth in Section 1.A. above;

iii. all keys, access cards, security codes and similar items to the Property in Seller's possession;

iv. the originals of all permits and licenses relating to the Property, if any, in Seller's possession;

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v. such documents, affidavits and certificates as are otherwise required by this Agreement, required by law and/or reasonably necessary for Buyer's acquisition and financing of the Property, including without limitation a Certificate of Non-Foreign Status (as required by Internal Revenue Service regulations), an affidavit regarding underground storage tanks (as required by Maine Law), a surface/subsurface waste disposal system certificate (if applicable), applicable Maine State REW forms and satisfactory evidence of Seller's existence, authority to convey the Property; and

vi. One or more Assignment and Assumption Agreements signed by Seller to assign to Buyer all of Seller's rights in and to the Maine Yacht Center Lease; the Governmental Permits, the Studies and Reports, the Construction Warranties and the Development Contracts; together with any reliance letters with respect to the Studies and Reports requested by Buyer.

(b) Buyer shall execute and/or deliver to Seller:

i. the purchase price;

ii. evidence that the buyer's Board of Trustees has voted affirmatively to proceed with Phase 1 of the Campus development project (the "Project") and has committed sufficient financial resources to fund Phase 1 of the Project which shall include all work reasonably necessary for the construction of one or more learning, research and collaboration buildings and supporting parking and public infrastructure, construction of a new pier, and renovation of the exterior of the existing historic landmarked Bean Building as shall be further described in the initial Site Plan application (as the same shall be jointly submitted by the parties hereto) as approved by the City of Portland (the contents of which – as approved by the City -- shall be referred to herein as "Phase 1"). Such financial resources may be from various sources including bond financing, Buyer's own resources, pledges and other philanthropic giving and such financial resources as may be available to Buyer over the course of the construction of Phase 1 of the Project as opposed to being fully available at the time of closing;

iii. One or more Assignment and Assumption Agreements signed by Buyer to enable Buyer to assume all of Seller's rights in and to the Maine Yacht Center Lease; the Governmental Permits, the Studies and Reports, the Construction Warranties and the Development Contracts; and

iv. such other documents, affidavits and certificates as are otherwise required by this Agreement, required by law and/or reasonably necessary for Seller's disposition of the Property.

Unless this Agreement is extended by mutual agreement of the parties, if the Closing does not occur for any reason by December 31, 2024, then this Agreement shall automatically terminate and be of

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no further force and effect and all obligations of the parties shall cease other than those specifically identified herein as surviving such termination.

6. RISK OF LOSS, DAMAGE AND INSURANCE.

(a) All risk of loss to the Property prior to the closing shall be borne by Seller. Seller shall keep the Property fully insured against fire and other extended coverage risks until the closing and shall name Buyer as an additional insured as Buyer's interest may appear.

(b) In the event that, prior to the closing, the improvements which are part of the Property are destroyed or, in the opinion of Buyer, substantially damaged, Buyer may either (i) terminate this Agreement, or (ii) accept the insurance proceeds payable by reason of such damage or destruction and close this transaction notwithstanding the same. If any part of the Property is damaged by fire or other casualty and Buyer does not elect to terminate this Agreement pursuant to this Section, then Seller and Buyer shall perform their respective obligations under this Agreement and in the event of a closing, Seller shall (x) deliver to Buyer at the Closing any insurance proceeds or condemnation awards received by Seller in respect of or allocable to the Property; and (y) assign to Buyer all of Seller's interest in and to any insurance proceeds and/or condemnation awards allocable to the Property which have not yet been received by Seller on that date; and (z) refrain from accepting or agreeing upon the amount of any payment of any proceeds or awards without Buyer's prior written consent. Notwithstanding the above, Buyer acknowledges that Seller is in the process of abating and demolishing all of the facilities on the site except for the so-called "Cannery" or "Bean Building"

7. INSPECTION/DELIVERY OF DOCUMENTS; AS-IS CONDITION. Reasonably promptly after this Agreement becomes effective, Seller shall deliver to Buyer copies of all of the Studies and Reports in Seller's possession or control to the extent not already provided to Buyer. With reasonable notice which shall be a minimum of three business days, Seller hereby grants Buyer or its agents the right to enter upon or in any part of the Property at all reasonable times and from time to time prior to the closing in order to inspect the Property, conduct surveys, soil tests, engineering and environmental testing and studies and to do such things as are reasonably necessary with respect to its due diligence, acquisition and development of the Property, provided, however, that Buyer's obligations to close hereunder shall not be conditioned upon the results of such due diligence other than as set forth below.

Buyer has commenced its review of the Studies and Reports, including environmental site assessments (ESAs) performed prior to the date hereof and accepts the Property in its as-is condition except as specifically set forth herein. Notwithstanding the foregoing, Seller shall not, after the date hereof, suffer or allow the occurrence of any further event(s) which would create, constitute, or be considered a recognized environmental condition (REC) under any qualified Phase I ESA without prompt and complete remediation or abatement, or else Seller shall be considered in default hereof. Furthermore, if Seller's title to the Property is further encumbered by any matter or means after the date hereof and such further encumbrance is not cleared prior to Closing, Seller shall be in default hereof. The foregoing is not a consent or permission to further encumber the title and Seller specifically agrees it shall not further encumber the title to the Property nor permit any mortgage, lien, claim, or charge to accrue which shall affect Seller's title.

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Further notwithstanding the foregoing, the parties acknowledge that the environmental site assessments conducted by or for Buyer or for which Buyer has been provided were conducted before certain demolition activities on the site that were performed by or for Seller. Buyer shall have the right to conduct further or updated ESAs and to review any remediation activities undertaken by Seller or its agents or contractors since the date of the ESAs conducted by or for Buyer. In the event that such further or updated ESAs reveal any RECs not previously disclosed to Buyer, Buyer shall have the right to terminate this Agreement or to require that further conditions be satisfied by Seller prior to closing.

Except as set forth in this Agreement, the Property will be conveyed "as is" at the time of closing and Seller disclaims all representations and warranties from Seller to Buyer other than any limited representations set forth herein. Buyer will indemnify Seller with respect to any environmental liabilities associated with the Property that may be discovered or arise post-closing, regardless of when the action(s) leading to such liabilities occurred. The foregoing sentence shall survive Closing under this Agreement. Seller will assign any environmental indemnification agreements it obtained from the Seller's grantor to Buyer, if any, with the right of the Buyer to enforce the indemnification obligations contained in any such agreements to the extent permitted therein.

8. CONDITIONS TO BUYER'S OBLIGATIONS TO PERFORM. The Buyer's obligation to perform hereunder and to close on the purchase of the Property are conditional upon the following matters:

(a) Buyer's obligation is conditional upon the Buyer's Board of Trustees approval of the Buyer's acquisition of the Property and the obligations of the Buyer under this Agreement.

(b) Buyer's obligation is conditional upon Buyer's satisfaction with its inspection of the Property during the Inspection Period as more fully set forth in Section 7 of this Agreement.

9. SELLER'S CONTINUATION OF CONSTRUCTION ACTIVITIES PRIOR TO CLOSING. Seller is currently conducting demolition, environmental remediation and site work at the Property. Seller has provided Buyer with copies of all of the plans, specifications, contracts and scope of work being performed by Seller or its agents or contractors at the Property at the time of execution hereof. Seller shall continue to perform such work in accordance with such contracts. To the extent that any such plans, specifications or contracts are modified or supplemented following the execution of this Agreement (the "Construction Modifications"), or to the extent that any additional contracts are to be entered into by Seller prior to the closing (the "New Contracts"), Seller shall endeavor to provide Buyer with notice thereof as soon as practicable, and Buyer shall have the right to comment upon and participate in any discussions regarding the scope and timing of such work; provided, however, that the notice contemplated by this provision shall be deemed satisfied if an agent, employee, or representative of Buyer is present with Seller (whether in person, telephonically, or by email) in conversations, meetings and other communications involving such Construction Modifications or New Contracts. Moreover, notwithstanding the notice provisions set forth in Section 16(b) below, the notice contemplated by this Section 9 may also be made to

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other designated representatives of Buyer involved in the construction activities via telephone in addition to, or in lieu of, any of the other manners of providing notice outlined in Section 9.

10. POSSESSION OF THE PROPERTY. The Property shall be delivered to the Buyer at the time of the closing free and clear of all tenancies or occupancies by any person or entity, unless otherwise agreed herein. The Property shall also be reasonably free and clear of all trash and debris, and free and clear of any and all of Seller's personal property and equipment, except as set forth herein.

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

(a) Seller is duly organized and in good standing under the laws of the State of Maine, with full capacity, power and authority to enter into and fully perform the obligations and transactions contemplated by this Agreement;

(b) The execution and delivery of this Agreement and the performance by Seller of its obligations hereunder are within the lawful power of Seller, have been duly authorized and approved by all necessary actions on behalf of Seller, and will not conflict with, or result in a breach of any of the terms, covenants and provisions of: (i) Seller's Articles of Incorporation or By-Laws; (ii) any judgment, writ, injunction, regulation, ruling, directive or decree of any court of governmental authority; or (iii) any agreement or instrument to which Seller is a party or by which Seller is bound;

(c) The person executing this Agreement on behalf of Seller is duly authorized to do so and to bind Seller to enter into and fully perform the obligations and transactions contemplated by this Agreement;

(d) No consent, approval, order or authorization of any court or other governmental entity is required to be obtained by Seller in connection with the execution and delivery of this Agreement or the performance hereof by Seller;

(e) There are no litigation, liens, judgments, violations, or proceedings pending, or to the best of Seller's knowledge, threatened against or relating to the Property nor does Seller know or have reasonable grounds to know of any basis for any such action, or of any governmental investigation relating to the Property;

(f) There is no pending, or to the best of Seller's knowledge, threatened action or proceeding (including, but not limited to, any condemnation or eminent domain action or proceeding) before any court, governmental agency or arbitrator relating to or arising out of Seller's ownership of the Property or any portion thereof, or which may adversely affect Seller's ability to perform its obligations under this Agreement, or which may affect the Property or any portion thereof;

(g) Seller is not a "foreign person" within the meaning of § 1445 of the Internal Revenue Code;

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(h) To the best of Seller's knowledge, no work has been performed or is in progress at, and no materials have been furnished to the Property or any portion thereof which may give rise to mechanic's, materialmen's or other liens against the Property or any portion thereof except as may arise in connection with Seller's further obligations as specifically contemplated by this Agreement; and

(i) All outstanding bills and/or accounts payable concerning the Property are either paid or will be paid prior to or at the time of closing unless otherwise agreed by the parties in writing.

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

(a) Buyer is duly organized and in good standing under the laws of the Commonwealth of Massachusetts, with full capacity, power and authority to enter into and fully perform the obligations and transactions contemplated by this Agreement;

(b) The execution and delivery of this Agreement and the performance by Buyer of its obligations hereunder are within the lawful power of Buyer, have been duly authorized and approved by all necessary actions on behalf of Buyer, and will not conflict with, or result in a breach of any of the terms, covenants and provisions of: (i) Buyer's Articles of Incorporation or Bylaws; (ii) any judgment, writ, injunction, regulation, ruling, directive or decree of any court of governmental authority; or (iii) any agreement or instrument to which Buyer is a party or by which Buyer is bound;

(c) The person executing this Agreement on behalf of Seller is duly authorized to do so and to bind Seller to enter into and fully perform the obligations and transactions contemplated by this Agreement; and

(d) No consent, approval, order or authorization of any court or other governmental entity is required to be obtained by Buyer in connection with the execution and delivery of this Agreement or the performance hereof by Buyer.

13. DEFAULT AND REMEDIES. In the event that either Buyer or Seller defaults in the performance of its obligations hereunder, the non-defaulting party may elect to terminate this Agreement by written notice, or seek specific performance of the defaulting party's obligations.

14. BROKERAGE. The parties agree that no broker has been involved in this transaction.

15. ADJUSTMENTS, PRORATIONS AND CLOSING COSTS.

(a) Real estate taxes, assessments, rentals, common area maintenance charges, fuel oil, and utilities shall be prorated as of the date of closing based upon amounts thereof actually paid or received (as the case may be) as of this date.

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

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

(d) A portion of the purchase price shall be withheld at the closing by Buyer if required by 36 M.R.S.A. § 5250-A unless Seller furnishes to Buyer an affidavit stating, under penalty of perjury, that Seller is a resident of Maine or that the transfer is otherwise exempt from withholding tax.

16. MISCELLANEOUS.

(a) Time. Time is of the essence of this Agreement.

(b) Notices. Any notices required or permitted to be given under this Agreement shall be sufficient if in writing and if sent: (i) by first class mail, postage prepaid, registered or certified, return receipt requested; (ii) by hand delivery; (iii) by FedEx, or similar overnight express mail service, prepaid; or (iv) electronic mail ("e-mail") or by facsimile ("Fax") transmission, each to the addresses and/or Fax numbers listed below:

TO SELLER:
Charles E. Hewett
IDEALS
100 Commercial Street
Portland, ME 04101
chuck.hewett@ideals.org

WITH A COPY TO:
Helen S. Coburn, Esq.
Bernstein Shur
100 Middle Street, PO Box 9729
Portland, ME 04104-5029
hcoburn@bernsteinshur.com

TO BUYER:
Northeastern University
Planning, Real Estate and Facilities
360 Huntington Avenue, 216-201
Boston, MA 02115
Attention: Kathy Spiegelman
Email: k.spiegelman@northeastern.edu

WITH A COPY TO:
Northeastern University
Office of the General Counsel
360 Huntington Avenue, Suite 301

DocuSign Envelope ID: 93BEB8D2-0DE3-4F1B-A064-562E6257362F

Boston, MA 02115
Attention: Michael Glover
Email: m.glover@northeastern.edu

All such communication shall be deemed made upon the earlier of (3) business days following deposit with the U.S. Mail or the date of receipt as disclosed on the return receipt (if sent by registered or certified mail), or upon delivery (if hand delivered), or upon delivery as indicated on the proof of delivery (if sent via FedEx or similar overnight express mail service), or if sent via email with proof of receipt by the primary addressee, effective upon the day sent if received prior to 3:00 p.m. local time or the next business day if received thereafter. With respect to any of the above-referenced methods of delivery, rejection or other refusal to accept or the inability to deliver because of a change of address of which no notice was given shall be deemed to be receipt of the notice sent. Either party may change its address for purposes of this subparagraph by giving the other party notice of the new address in the manner described herein.

(c) Binding Effect/Assignment. This Agreement shall not become a binding contract until signed by both parties and that fact has been communicated to all parties or their agents. This Agreement will inure to the benefit of and bind the respective heirs, successors, personal representatives and assigns of the parties hereto and may be cancelled, modified or amended only by a writing executed by the parties hereto or their legal representatives.

(d) Construction. This Agreement and the Exhibits hereto set forth the entire agreement between the parties, and there are no other agreements or understandings between them related to the subject matter hereof. As used in this Agreement, the singular number shall include the plural, the plural the singular, and the use of one gender shall be deemed applicable to all genders. This Agreement shall be governed by and construed in accordance with the laws of Maine. All representations, warranties, covenants and indemnities made by either party herein shall survive the closing. If any provision of this Agreement is determined to be invalid or unenforceable, it shall not affect the validity or enforcement of the remaining provisions hereof. In the event of any dispute under this Agreement; prior to any litigation, the parties hereto shall first submit the matter to mediation and shall undertake good faith efforts to resolve any such dispute. In the event that a dispute hereunder is not resolved by mediation, the parties agree to submit any litigation to enforce this Agreement to the jurisdiction of the United States District Court for the District of Maine.

(e) Counterparts/Electronic Signatures. This Agreement may be simultaneously executed in any number of counterparts, each of which when so executed and delivered shall be an original, but such counterparts shall constitute one and the same instrument. This Agreement may be signed electronically and such shall be treated as original signatures.

(f) Attorney's Fees. If any legal action (including without limitation mediation and arbitration) is brought or compelled by either party to enforce any provisions of this Agreement, the prevailing party shall be entitled to recover from the other party its reasonable attorneys' and paralegals' fees and court costs, subject to and limited by the provisions of the Default and Remedies section of this Agreement.

DocuSign Envelope ID: 93BEB8D2-0DE3-4F1B-A064-562E6257362F

(g) Effective Date. The Effective Date of this Agreement shall be deemed to be the date first set forth above in this Agreement, provided that if no date is filled in, the Effective Date shall be the last date of the signature of either Buyer or Seller.

[*Signature Page Follows*]

DocuSign Envelope ID: 93BEB8D2-0DE3-4F1B-A064-562E6257362F

IN WITNESS WHEREOF, Seller and Buyer have executed this Agreement under seal as of the dates indicated above.

SELLER

THE INSTITUTE FOR DIGITAL ENGINEERING AND LIFE SCIENCES

DocuSigned by:
Charles E. Hewett
4BD10666DAF9434...

By: Charles E. Hewett
Its: Executive Director
Date: October 23, 2023

BUYER

NORTHEASTERN UNIVERSITY

DocuSigned by:
Thomas E. Nedell
FF682479C14A4DA...

By: Thomas E. Nedell
Its: Senior Vice President & Treasurer
Date: October 23, 2023

DocuSign Envelope ID: 93BEB8D2-0DE3-4F1B-A064-562E6257362F

EXHIBIT A
[*Legal Description*]

A certain parcel of land, together with the improvements thereon, located on the easterly sideline of Interstate 295 and the southerly sideline of Sherwood Street in the City of Portland, County of Cumberland and State of Maine being further described as follows:

Beginning at a 6-inch by 6-inch granite monument found inscribed “ECJ #356” marking the southerly sideline of Sherwood Street westerly sideline of the Canadian National Railroad and further described as the most northeasterly corner of described parcel;

THENCE, S 23-36-55 E, along said Railroad 316.33 feet to a 6-inch by 6-inch granite monument found inscribed "ECJ 356";

THENCE, S 23-36-55 E, along said Railroad, 526.90 feet, to a 4-inch by 4-inch granite monument with a drill hole;

THENCE, S 23-36-55 E, along said Railroad, 745 feet, more or less to the low water mark of the Casco Bay,

THENCE, in a general westerly direction along said low water line about 1,685 feet to a point on the easterly sideline of Interstate 295;

THENCE, N 2-23-50 W, along said sideline, 48 feet, more or less to a point;

THENCE, S 87-30-10 W, along said sideline, 30.00 feet to a point;

THENCE, N 2-23-50 W, along said sideline, 61.46 feet to a drill hole found, said drill hole lying on a tie course of S 73-07-39 W, 878.87 feet from the previous mentioned 4-inch by 4-inch granite monument with a drill hole;

THENCE, N 2-23-50 W, along said sideline, 237.87 feet to a 5/8 inch re-bar found capped "ECJ #509";

THENCE, N 89-44-34 E, along said sideline, 1.05 feet to a 5/8 inch re-bar found capped "ECJ #509";

THENCE, N 6-28-53 E, along said sideline, 122.88 feet to a 5/8 inch re-bar found capped "ECJ #509";

THENCE, N 0-24-30 E, along said sideline, 88.91 feet to a 4-inch by 4-inch granite monument found inscribed "ECJ #509";

THENCE, N 24-48-04 E, along said sideline, 60.29 feet to a 6-inch by 6-inch granite highway monument;

THENCE, N 31-29-16 W, along said sideline, 31.96 feet to a 4-inch by 4-inch granite monument inscribed "ECJ #509";

THENCE, N 3-26-49 W, along said sideline, 111.10 feet to a 5/8 inch re-bar found capped "ECJ #509";

THENCE, N 8-40-57 E, along said sideline, 89.05 feet to a 4-inch by 4-inch granite monument inscribed "ECJ #509";

THENCE, N 23-15-05 E, along said sideline, 66.28 feet to a 4-inch by 4-inch granite monument Inscribed "ECJ #509";

THENCE, N 34-47-28 E, along said sideline, 96.68 feet to a 4-inch by 4-inch granite monument inscribed "ECJ #509";

THENCE, N 25-25-29 E, along said sideline, 160.02 feet to a 5/8 inch re-bar found capped "ECJ #509";

THENCE, N 23-37-03 E, along said sideline, 63.03 feet to a 4-inch by 4-inch granite

DocuSign Envelope ID: 93BEB8D2-0DE3-4F1B-A064-562E6257362F

monument inscribed "ECJ #509";

THENCE, N 39-23-04 E, along said sideline, 6.72 feet to a 6-inch by 6-inch granite monument found inscribed "ECJ #509";

THENCE, N 55-32-30 W, along said sideline, 11.67 feet to a 4-inch by 4-inch granite monument inscribed "ECJ #509";

THENCE, N 34-47-50 E, along said sideline, 117.04 feet to a 4-inch by 4-inch granite monument inscribed "ECJ #509";

THENCE, N 34-43-38 E, along said sideline, 15.02 feet to a 5/8 inch re-bar found capped "ECJ #509" marking the southerly sideline of Sherwood Street;

THENCE, S 55-12-08 E, along said Sherwood Street, 288.60 feet to the point of beginning.

The foregoing description was prepared based on the Survey prepared by OEST Associates, Inc. dated February, 1999 and last revised February 26, 1999 recorded in in the Cumberland County Registry of Deeds in Plan Book 199, Page 159.

Alternate Legal Description [recent survey; grant to be without covenant of title]:

All right, title and interest in and to the following described lot or parcel of land, together with the buildings and improvements thereon, located in the City of Portland, County of Cumberland, State of Maine, which description is based on a ALTA/NSPS Land Title Survey prepared by VHB, dated June 30, 2021, last revised February 28, 2022, and Seller makes no representations or warranties as to the accuracy of said property description:

Beginning at a granite bound found at the intersection of the southerly sideline of Sherwood Street and the westerly sideline of land now or formerly of the state of Maine as described in the Cumberland County Registry of Deeds in Book 25500, Page 215, and Book 10924, Page 91 being formerly owned by the St. Lawrence & Atlantic Railroad Company, in part, and the Canadian National Railway Company, in part;

THENCE along the westerly sideline of land of the State of Maine South 23°38’41” East for a distance of 316.33 feet to a granite bound found;

THENCE continuing along land of the State of Maine South 23°34’45” East for a distance of 526.95 feet to a granite bound found;

THENCE continuing along the land of the State of Maine South 23°34’45” East for a distance of 745 feet, more or less to the low water mark of Casco Bay,

THENCE in a generally westerly direction along the low water line about 1,720 feet, more or less, to a point in the easterly sideline of Interstate 295;

THENCE along the easterly sideline of Interstate 295 the following courses and distances:

North 2°23’38” West for a distance of 48 feet, more or less to a point;

South 87°36’22” West for a distance of 30.00 feet to a point;

North 2°23’38 West for a distance of 61.46 feet to a point being located South 73°07’57” West at a distance of 878.66 feet from a granite bound found on the westerly sideline of land now or formerly of the State of Maine;

North 2°23’38 West for a distance of 237.87 feet to a point;

North 89°44’46” East for a distance of 1.05 feet to a rebar found;

North 6°29’05” East for a distance of 122.88 feet to a point;

North 0°24’42: East for a distance of 88.91 feet to a granite bound found;

DocuSign Envelope ID: 93BEB8D2-0DE3-4F1B-A064-562E6257362F

North 24°48’16 East for a distance of 60.29 feet to a granite bound found;
North 31°29’04” West for a distance of 31.96 feet to a point;
North 3°26’37” West for a distance of 111.10 feet to a point;
North 8°41’09” East for a distance of 89.05 feet to a point;
North 23°15’17” East for a distance of 66.28 feet to point;
North 34°47’40” East for a distance of 96.68 feet to a granite bound found;
North 25°25’41” East for a distance of 160.02 feet to a point;
North 23°37’15” East for a distance of 63.03 feet to a point;
North 39°23’16” East for a distance of 6.72 feet to a point;
North 55°32’18” West for a distance of 11.67 feet to a point;
North 34°48’02” East for a distance of 117.04 feet to a granite bound found;
North 34°43’50” East for a distance of 15.02 feet to a rebar found at the southerly sideline of Sherwood Street;

THENCE departing from the easterly sideline of Interstate 295 and running along the southerly sideline of Sherwood Street South 55°12’19” East for a distance of 288.59 feet to the point of beginning.

Meaning and intending to convey the same premises described in a Quitclaim Deed with Covenant from B&G Foods North America, Inc. to The Initiative for Digital Engineering and Life Sciences dated March 23, 2022 and recorded in the Cumberland County Registry of Deeds in Book 39282, Page 151.

The above described property shall be conveyed subject to the encumbrances listed as items 1-14 on Exhibit A of the Quitclaim Deed with Covenant from The Pillsbury Company to Heritage Acquisition Corp. dated March 15, 1999 and recorded in the Cumberland County Registry of Deeds in Book 14616, at Page 50 and the rights and easements granted by Heritage Acquisition Corp. to Central Maine Power Company and Verizon New England, Inc. by instrument dated February 7, 2006 and recorded in the Cumberland County Registry of Deeds in Book 24049, Page 189.

DocuSign Envelope ID: 93BEB8D2-0DE3-4F1B-A064-562E6257362F

EXHIBIT B
[*Development Contracts*]

1. Design Agreement by and between Bruner/Cott and The Initial for Digital Engineering and Life Sciences ("IDEALS") (*in negotiation; near final form*)

2. Design Agreement by and between CambridgeSeven and IDEALS (*in negotiation; near final form)*

3. Construction Management Agreement, by and between IDEALS and Consigli Construction Co., Inc. dated January 17, 2023

4. Cooperative Agreement by and between the Maine DOT ("MDOT") and IDEALS, dated as of January 18, 2023

5. MDOT Temporary Access Road Rights Agreement by and between MDOT and IDEALS, dated as of March 30, 2023

6. License Agreement with the City of Portland Fire Department by and between the City of Portland and IDEALS dated May 24, 2023

7. License Agreement with the City of Portland Fire Department by and between the City of Portland and IDEALS dated August 2, 2022

8. IDEALS Boiler Purchase Agreement by and between IDEALS and Maine Plywood USA, LLC dated June 19, 2023

9. Consultant Services Agreement, by and between IDEALS and MacRostie Historic Advisors

10. Consultant Services Agreement, by and between IDEALS and Thorton Tomasetti

11. Consultant Services Agreement, by and between IDEALS and Tsoi Kobus Design

12. Consultant Services Agreement by and between IDEALS and Vanasse Hangen Brustlin

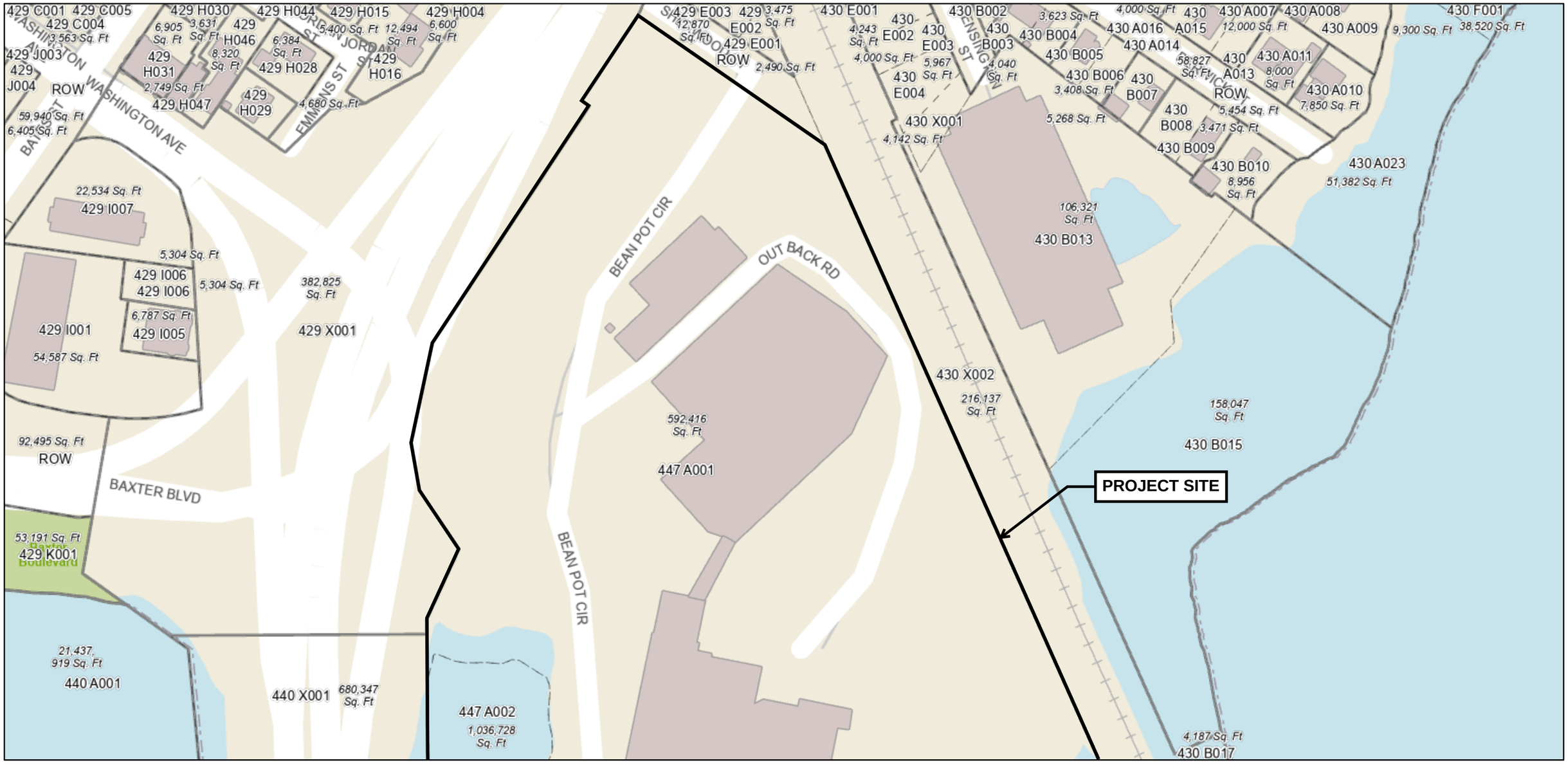
13. Consultant Services Agreement, by and between IDEALS and Woodard & Curran

14. Consultant Services Agreement, by and between IDEALS and Power Engineers

15. Consultant Services Agreement, by and between IDEALS and SW Cole Engineering

16. Consultant Services Agreement, by and between IDEALS and Stephen Stimson Associates

ArcGIS Web Map



8/10/2023, 11:07:21 AM

parcels

Tax

Conveyance

1:1,514

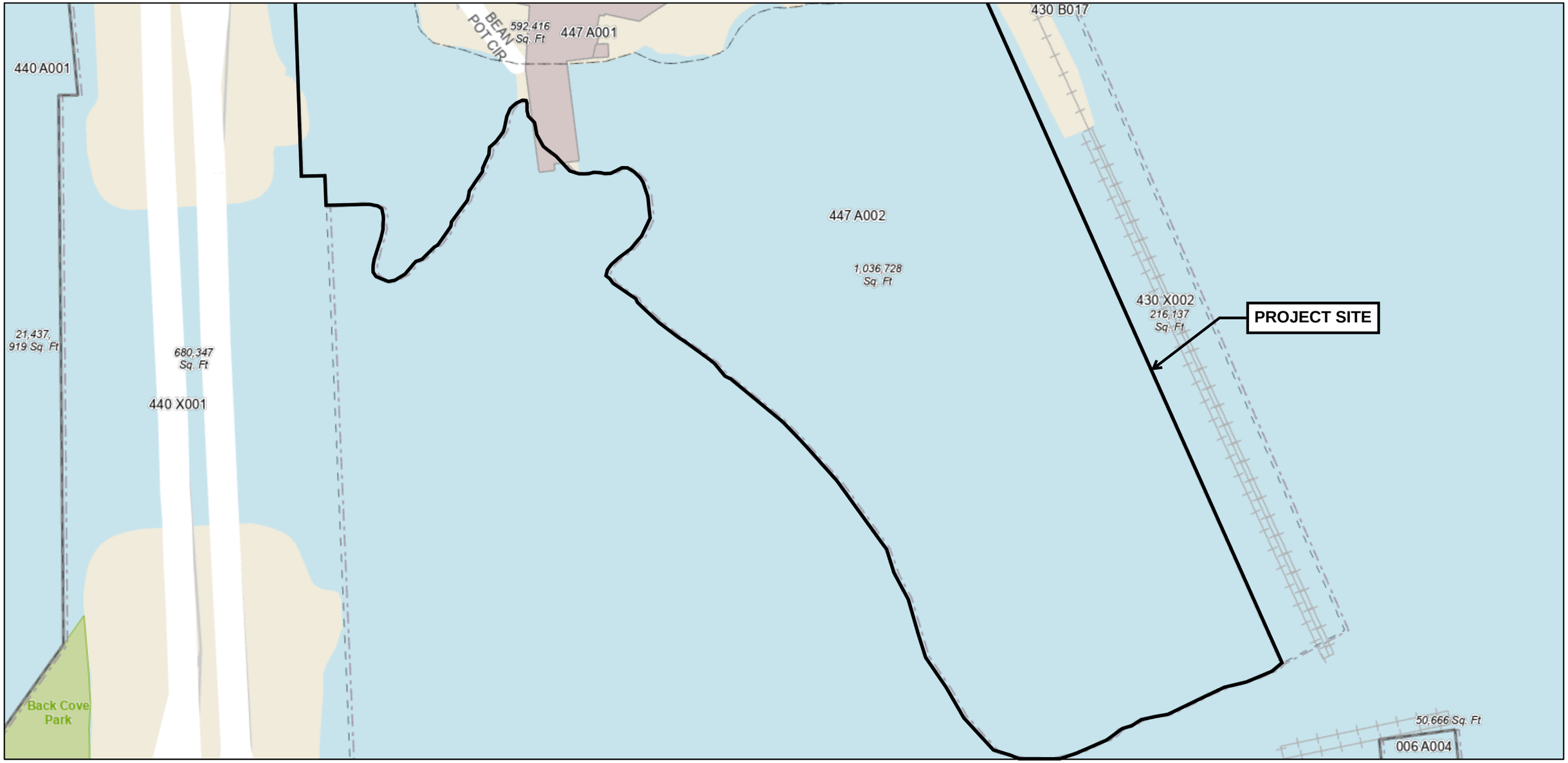
0 0.01 0.03 0.06 mi

0 0.03 0.06 0.11 km

City of Portland, DPS

Web AppBuilder for ArcGIS
City of Portland, Maine

ArcGIS Web Map



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parcels

Tax

Conveyance

1:1,514

0 0.01 0.03 0.06 mi

0 0.03 0.06 0.11 km

City of Portland, DPS

Web AppBuilder for ArcGIS
City of Portland, Maine

3. FINANCIAL CAPACITY

A copy of a letter verifying the Applicant's financial capacity to undertake the project is attached to this Section.

3.1 LIST OF ATTACHMENTS

- Financial Capacity Letter.

Northeastern

October 25, 2023

Ms. Denise Cameron
Woodard and Curran
12 Mountfort Street
Portland, ME. 04101

Dear Ms. Cameron:

Northeastern University expects phase 1 of the Roux Campus project to cost approximately $470 million dollars.

To fund the project, the University will use a mix of philanthropic resources (the majority of which are already pledged) and debt.

Thank you.

Sincerely,

Thomas Nedell
Senior Vice President for Finance and Treasurer

Office of the Senior Vice President Finance

177 Huntington Ave.
360 Huntington Ave.
Boston, MA 02115

617.373.2240
fax 617.373.4728

finance.northeastern.edu

4. TECHNICAL ABILITY

The project team includes the following partners completing various engineering, landscape architecture, and architectural components of the project. The project team is also supported by a number of other professional firms providing support with survey, structural design, geotechnical design, mechanical/electrical/plumbing design, and other disciplines. Copies of resumes and information on other members of the project team can be provided upon request.

Woodard & Curran (W&C), a 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.

Stephen Stimson Associates, STIMSON is a landscape architecture firm based in Cambridge and Princeton, Massachusetts and is comprised of an urban and rural landscape architecture studio, a working farm, and a plant nursery. STIMSON is a female, minority led partnership between Lauren and Stephen Stimson with 30 staff and 5 principals. The studio was conceived in 1992 by Stephen Stimson, who was born on a 10th generation dairy farm in New England. A devotion to craft, and a simple, agrarian-minded approach to design is the mainstay of the firm's work.

Cambridge Seven Associates (C7), is an architecture firm based in Cambridge, Massachusetts, with a staff of 60 people, including registered architects, planners, LEED Accredited Professionals, exhibit, and graphic designers. Since 1962, they have provided clients with provocative yet sensitive designs by recognizing and acting upon the unique opportunities inherent in every project. C7 has received dozens of awards, including the prestigious National AIA Firm Award, and is internationally acclaimed for its innovative work in architecture, urban design, transportation, planning, graphic design, exhibition and interiors.

Bruner/Cott Architects, is a 35-person historic preservation architecture firm located in Boston, Massachusetts. Their leadership team brings a broad, integrated perspective to design, giving depth to each of their practice areas. Bruner/Cott's work has been recognized for award-winning design from preservation to adaptive reuse and new construction, with a focus on educational and cultural institutions. Bruner/Cott partners with private developers for residential and commercial buildings. Bruner/Cott is known for creativity in inventing new solutions to complex programs and as design leaders for historic renewal and contemporary design in the context of urban revitalization and institutional re-invention.

5. NOISE

HVAC and primary mechanical equipment will be located and screened to mitigate noise impacts. Noise associated with the proposed development will not exceed regulated levels and is not anticipated to negatively impact surrounding development in its urban setting. Noise and vibration associated with the proposed development will not exceed regulated levels.

Notwithstanding the existing buffers to the Site, there will be noise impacts as a result of construction activities. Construction activities will be limited to the hours permitted by the City. For those noise events that are above the regular background level, advance notifications will be provided using email and webpage communication mechanisms. The City of Portland Noise Ordinance will be followed.

6. VISUAL QUALITY & SCENIC CHARACTER

As further described in the City of Portland Site Plan Application for the proposed development, the architecture and landscaping have been designed to be consistent with the scenic character of the surrounding area. A Certificate of Appropriateness will also be obtained from the City of Portland Historic Preservation Board. It is not anticipated that the proposed development will result in any negative visual impacts.

7. WILDLIFE & FISHERIES

Immediately adjacent to this highly developed site are natural resource areas including: an estuarine intertidal emergent marsh located east of the site near the rail corridor; coastal wetlands for all areas below highest annual tide; tidal waterfowl and wading bird habitat, and blue mussel habitat. A wetland delineation investigation, including a functions & values assessment, was conducted by scientists at FB Environmental in June of 2023, and is summarized in the report attached to this section.

The attached Official Species List identifies the northern long-eared bat (endangered species), roseate tern (endangered species) and monarch butterfly (candidate 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 and the fall. Tree clearing will be conducted between August and May to avoid impacts to long-ear bats. Applicable permitted tree clearing dates for the project will be confirmed with regulatory agencies during final design.

A letter was 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 the review request letter is attached to this Section. It is not anticipated that the proposed development will have a negative impact on the northern long-eared bat, roseate tern, or monarch butterfly.

7.1 LIST OF ATTACHMENTS

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

FB environmental

97A Exchange Street
Suite 305
Portland, ME 04101

207-221-6699
www.fbenvironmental.com

Denise Cameron
Project Manager | Senior Principal
Woodard & Curran
41 Hutchins Drive
Portland, ME 04102

June 27, 2023

Subject: Roux Institute – Wetland Delineation

Dear Denise,

As requested by Woodard & Curran, FB Environmental Associates (FBE) delineated wetlands and watercourses and conducted a wetland functions and values assessment at a site in Portland, Maine. The site is intended to be the permanent home of the Roux Institute, a graduate education and research facility, under the Initiative for Digital Engineering & Life Sciences (IDEALS). The specific Survey Area consists of a 14-acre parcel situated in Portland's East End at the mouth of Back Cove. The attached map depicts the location of the parcel, formerly known as the B&M property.

Fieldwork was conducted on 6 June 2023, by FBE's Ecological Services Division Lead and Senior Wetland Scientist Kevin Ryan and Wetland Scientist Sarah Large. Wetlands were identified and delineated in accordance with the 1987 US Army Corps of Engineers (USACE) Wetland Delineation Manual[1] using the methods described in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0.[2] Copies of completed wetland determination data forms are included with this report. All wetlands and watercourses were classified using the US Fish and Wildlife Service (USFWS) Classification of Wetlands and Deepwater Habitats of the United States.[3]

Wetland Delineation Methods

Wetland boundaries are marked in the field using pink flagging emblazoned with the words "WETLAND DELINEATION." Boundaries of wetlands delineated during the field survey are geo-located using a sub-meter accuracy GPS unit (EOS Arrow-100). The collected GPS data are then used to create a wetland delineation map.

In Maine, Wetlands of Special Significance (WoSS) are regulated by the Maine Department of Environmental Protection (DEP) under Chapter 310 of the Maine Natural Resources Protection Act. All coastal wetlands and great ponds (inland bodies of water >10 acres in size) are classified as WoSS. In addition, a freshwater wetland may be considered one of special significance if it: (1) contains a natural community that is critically imperiled or imperiled as defined by the Maine Natural Areas Program; (2) contains significant wildlife habitat; (3) is located within 250 feet of a coastal wetland; (4) is located within 250 feet of a great pond; (5) contains at least 20,000 square feet of aquatic vegetation, emergent marsh vegetation[4], or open water; (6) is inundated with floodwater during a 100-year flood event based on flood insurance

[1] Environmental Laboratory. (1987). Corps of Engineers Wetlands Delineation Manual. Wetlands Research Program Technical Report Y-87-1. Vicksburg, MS: US Army Engineer Waterways Experiment Station.
[2] U.S. Army Corps of Engineers. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, C. V. Noble, and J. F. Berkowitz. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
[3] Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. *Classification of wetlands and deepwater habitats of the United States*. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. 131pp.
[4] Cowardin et al. [1979] defines emergent hydrophyte (i.e., emergent marsh vegetation) as "…rooted herbaceous angiosperms, ferns, and fern allies that grow in wet soil, stand erect during most or all of the growing season, and may be periodically to permanently flooded at the base, but do not tolerate prolonged inundation of the entire plant").

maps; (7) contains peatlands; or (8) is located within 25 feet of a river, stream, or brook. The Survey Area was assessed for WoSS.

Wetland Functions and Values Assessment Methods

FBE conducted the wetland functional assessment pursuant to the approach described by the Army Corps Highway Methodology Workbook Supplement: Wetland Functions and Values (US ACOE, 1995). In this "Descriptive Approach" to function assessment, prior to determining what functions and values are principal and why, evaluators first determine if particular functions and values are present and then if they are "principal". Functions and values are considered "principal" if they are an important physical component of a wetland ecosystem (function only), and/or are considered of special value to society, from a local, regional, and/or national perspective. When making determinations regarding a wetland, evaluators are encouraged to determine whether the wetland has the potential to serve these functions and values.

Functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society and result from both living and non-living components of a specific wetland resource. These include all processes necessary for the self-maintenance of the wetland ecosystem, such as primary productivity and nutrient cycling, among others. Therefore, functions relate to the ecological significance of wetland properties without regard to subjective human values.

Values are benefits that derive from one or more functions and the physical characteristics associated with a wetland. Most wetlands have corresponding societal values. The value of a particular wetland function, or combination of functions, is based on human judgment of the worth, merit, quality, or importance attributed to those functions.

The 13 functions and values associated with a wetland functional assessment are described below:

1. *Groundwater Recharge/Discharge*: The potential for the wetland to serve as a groundwater recharge and/or discharge area. This function refers to the fundamental interaction between wetlands and aquifers, regardless of the size or importance of either.
2. *Floodflow Alteration (Storage & Desynchronization)*: The effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events and the gradual release of floodwaters. This function adds to the stability of the wetland ecosystem or its buffering characteristics and provides social or economic value relative to erosion and/or flood prone areas.
3. *Fish and Shellfish Habitat*: The effectiveness of seasonal or permanent watercourses associated with the wetland to provide fish and shellfish habitat.
4. *Sediment/Toxicant/Pathogen Retention*: The ability of the wetland to reduce or prevent degradation of water quality. This function relates to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens in runoff water from surrounding uplands, or upstream erosive wetland areas.
5. *Nutrient Removal/Retention/Transformation*: The ability of the wetland to act as a trap for nutrients in runoff water from surrounding uplands or contiguous wetlands and the ability of the wetland to process these nutrients into other forms or trophic levels. One aspect of this function is to prevent ill effects of nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries.
6. *Production Export*: The effectiveness of the wetland to produce food or usable products for man or other living organisms.
7. *Sediment/Shoreline Stabilization*: The effectiveness of the wetland in stabilizing stream banks and shorelines against erosion.
8. *Wildlife Habitat*: The effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and wetland edges. Both resident and migrating species are considered.

9. *Recreation*: The suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities.
10. *Educational/Scientific Value*: The suitability of the wetland as a site for an "outdoor classroom," or as a location for scientific study or research.
11. *Uniqueness/Heritage*: The effectiveness of the wetland or its associated waterbodies to provide certain unique values, including archaeological sites, critical habitat for endangered species, its overall health and appearance, its role in the ecological system of the area, or its relative importance as a typical wetland class for the geographic location.
12. *Visual Quality/Aesthetics*: The visual and aesthetic quality or usefulness of the wetland.
13. *Endangered Species Habitat*: The suitability of the wetland to support threatened or endangered species.

Site Description

The site is composed of approximately 14-acres of previously developed land bounded by Casco Bay to the south and east, Portland's Back Cove to the west, I-295 to the northwest, and the former Grand Trunk Railway rail grade to the northeast. The site was home to the B&M Baked Beans plant that operated at the site from 1913 to circa 2022. The factory buildings occupy roughly half of the parcel[5], with parking lots accounting for an additional third. The remaining sixth of the property is composed of manicured lawn, trees and shrubs, and a small linear wetland running north-south along the eastern property boundary with the railroad grade.

Soils at the site consist primarily of urban fill. An elevated plateau-like area is present between the factory buildings and the wetland complex/ravine to the east.

Wetlands and Watercourses

FBE identified one contiguous wetland within the Survey Area which contains several wetland classes. Areas immediately adjacent to the site are regularly flooded estuarine intertidal wetlands with a predominantly mud substrate (E2US3N). Areas mapped beyond this wetland type are classified as estuarine subtidal (E1UBL) as the substrate remains inundated at low tide.

The wetland complex at the site is coastal and therefore meets the criteria to be deemed Wetland of Special Significance by DEP.

Wetland A - E2US3N Section

The western end of the shoreline at the site, extending east to the pier, meets the classification of a regularly flooded estuarine intertidal unconsolidated shore wetland with a mud substrate (E2US3N). The area is a mudflat that is bordered by riprap on all sides. The wetland has been altered by the development present on and adjacent to the site. Rockweed (*Ascophyllum nodosum*), a seaweed common to sheltered shores and coves, is present within the wetland attached to riprap and on rocks within the mudflat.

Wetland A – E2US1N Section

East of the pier, the characteristics of Wetland A differ in terms of substrate and meets the classification of a regularly flooded estuarine intertidal unconsolidated shore wetland with a cobble-gravel substrate (E2US1N). The predominantly cobble-gravel substrate of this section of the wetland is strewn with old, weathered bricks and other historic construction debris. The land area immediately east of the pier is bounded by a stone retaining wall; beyond it to the east, the shoreline is lined with rocks of various sizes ranging from pebbles to boulders.

Wetland A – E2EM1N Section

The channelized section of Wetland A on the eastern boundary of the property is an estuarine intertidal emergent marsh system with persistent vegetation (E2EM1N) situated in a ravine that is regularly flooded. This portion of the wetland has a variety of native and nonnative invasive shrubs growing along the banks. Native shrubs observed

[5] The buildings were in the process of being demolished during the course of the field investigation.

in proximity to the wetland included willows (*Salix* sp.), staghorn sumac (*Rhus hirta*), and cherry trees (*Prunus* sp.). Nonnative plants observed include black locust trees (*Robina pseudoacacia*) and cultivated apple trees (*Malus pumila*). Non-native, invasive plants observed consisted of Morrow's honeysuckle (*Lonicera morrowii*), Japanese knotweed (*Fallopia japonica*), and multiflora rosa (*Rosa multiflora*).

At the USACE plot within this section of the wetland, smooth cordgrass (*Spartina alterniflora*) is the dominant vegetation with Carolina sea-lavender (*Limonium carolinianum*) and common glasswort (*Salicornia depressa*) also present. Soil met the criteria for hydric soil indicators A11 – Depleted Below Dark Surface and F3 Depleted Matrix as the soil profile consisted of a dark surface layer of silty clay loam underlain by a depleted clay with prominent redoximorphic concentrations. Observed primary indicators of hydrology consisted of A1 – Surface Water, A2 – High Water Table, A3 – Saturation, and B9 – Water-Stained Leaves. Completed USACE Wetland Determination Data forms are attached to this letter.

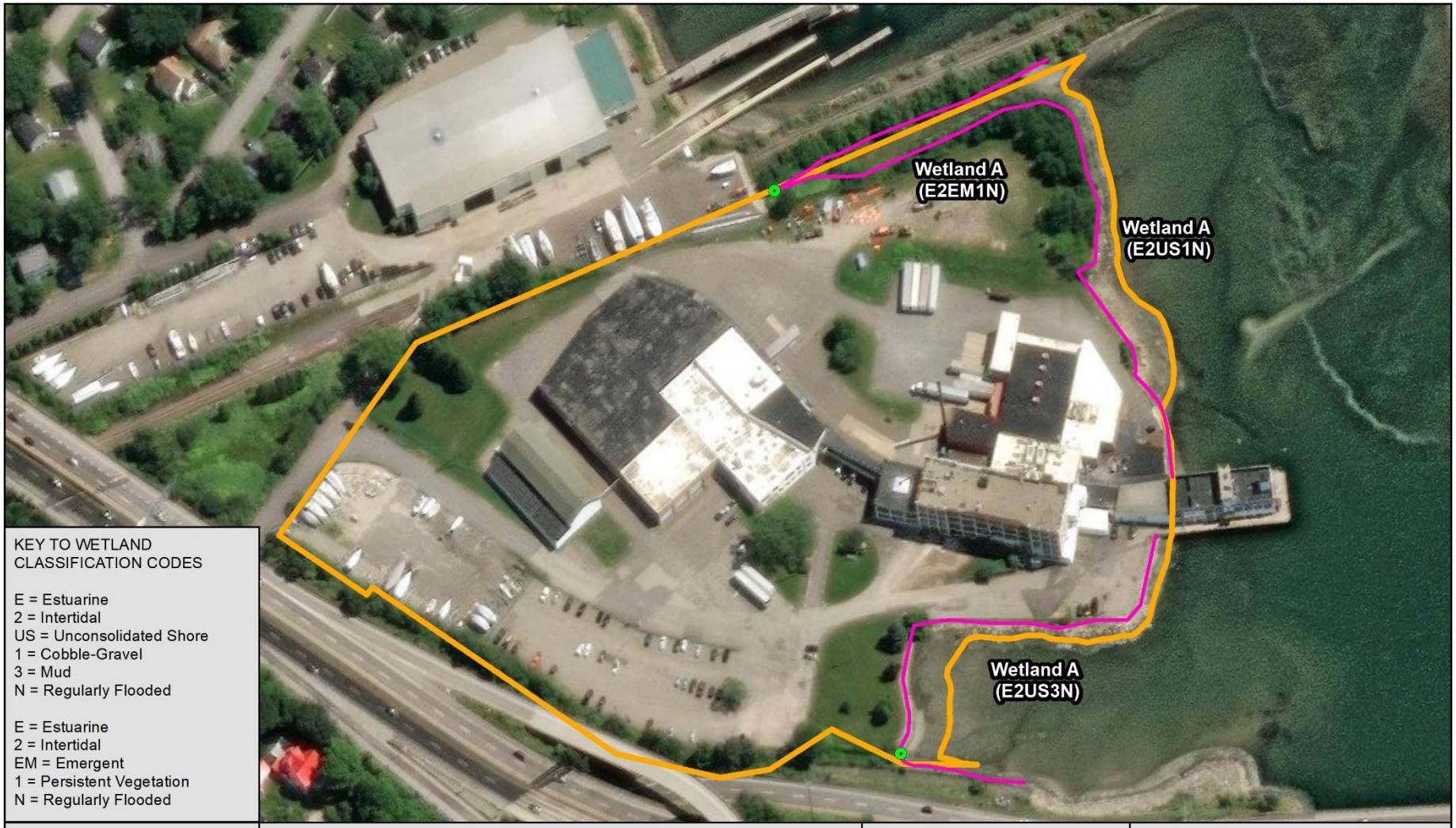
Functions and Values

Principal functions of Wetland A are Fish and Shellfish Habitat, Production Export, Wildlife Habitat, and Uniqueness/Heritage. Other functions and values that the wetland provides consist of Floodflow Alteration, Sediment/Toxicant Retention, Nutrient Removal, Sediment/Shoreline Stabilization, Recreation, Educational/Scientific Value, and Visual Quality/Aesthetics. A completed USACE Function and Value Evaluation Form is attached to this letter.

Thank you for the opportunity to assist Woodard & Curran with this project. Please do not hesitate to contact me if you have questions or need additional information.

Regards,

Kevin Ryan
Ecological Services Division Lead
FB Environmental Associates

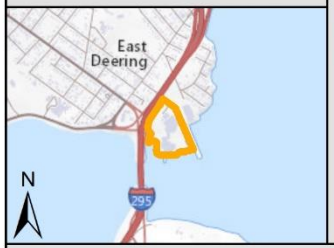


KEY TO WETLAND CLASSIFICATION CODES

E = Estuarine
2 = Intertidal
US = Unconsolidated Shore
1 = Cobble-Gravel
3 = Mud
N = Regularly Flooded

E = Estuarine
2 = Intertidal
EM = Emergent
1 = Persistent Vegetation
N = Regularly Flooded

LOCUS MAP



Survey Area
Wetland Boundary
Culvert

N E S W

FB environmental

0 100 200 Feet

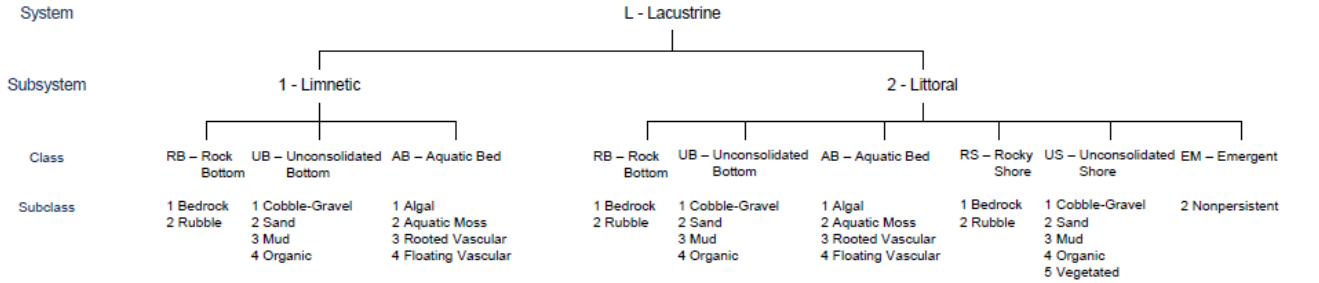
Initiative for Digital Engineering & Life Sciences
Roux Institute
Portland, Maine

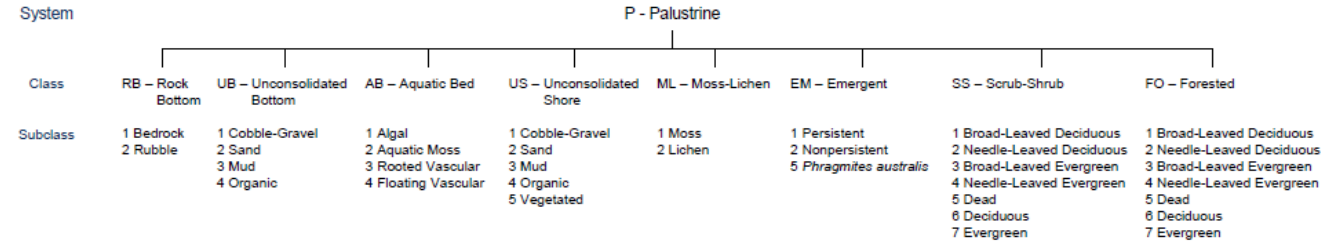
Data Sources: Maine Geolibrary, ESRI, FBE
Coordinate System: NAD 1983 UTM Zone 19
Map created by K. Ryan on June 22, 2023

Notes: Wetlands were delineated by Kevin Ryan and Sarah Large in accordance with the 1987 US Army Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, v2.0. January 2012. Wetlands were classified using the Classification of Wetlands and Deepwater Habitats of the United States (USFWS, 1979).

Cowardin Wetland Classification System

WETLANDS AND DEEPWATER HABITATS CLASSIFICATION



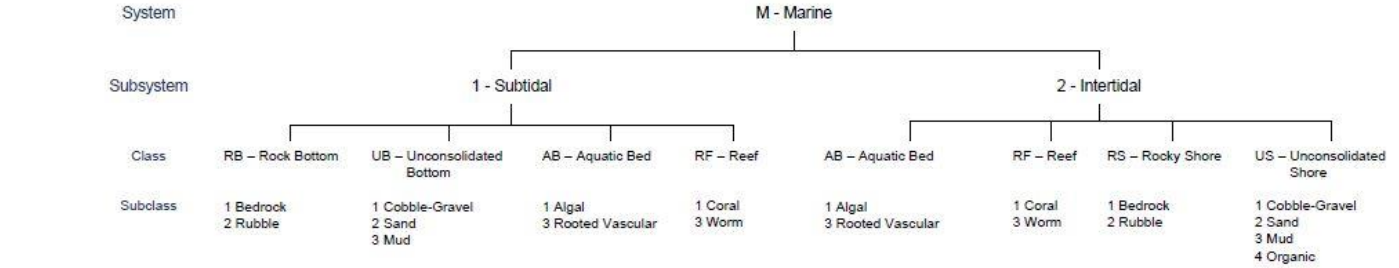


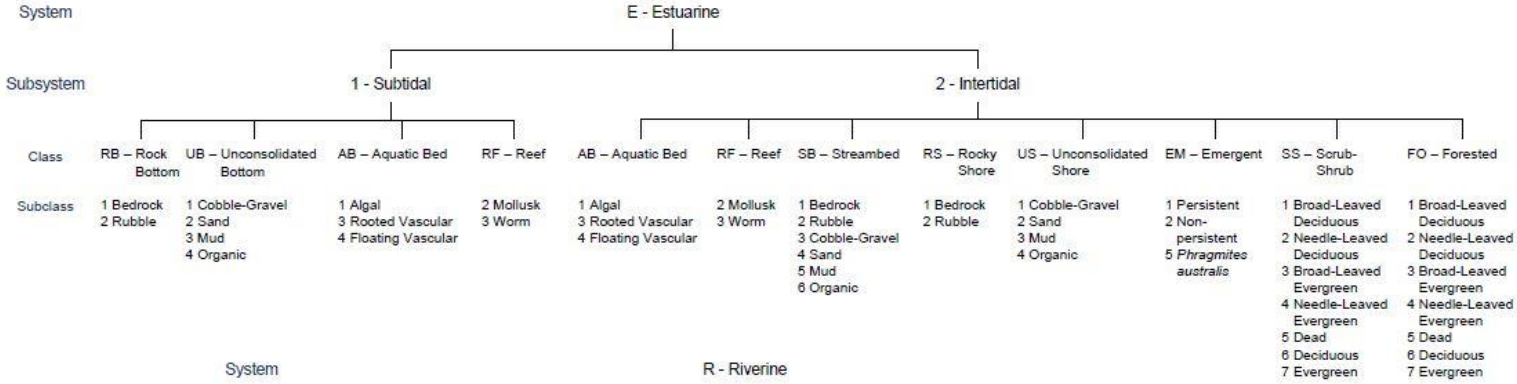
MODIFIERS

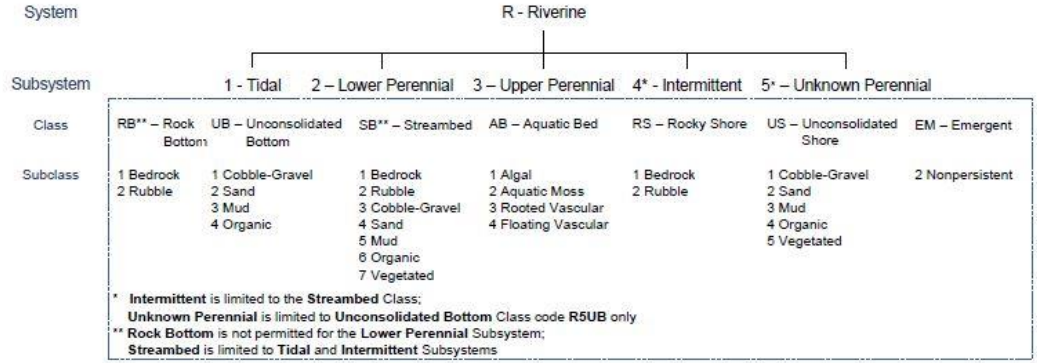
In order to more adequately describe the wetland and deepwater habitats, one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

Water Regime			Special Modifiers	Water Chemistry			Soil
Nontidal	**Saltwater Tidal**	**Freshwater Tidal**		**Coastal Halinity**	**Inland Salinity**	**pH Modifiers for all Fresh Water**	
A Temporarily Flooded	L Subtidal	S Temporarily Flooded-Tidal	b Beaver	1 Hyperhaline	7 Hypersaline	a Acid	g Organic
B Saturated	M Irregularly Exposed	R Seasonally Flooded-Tidal	d Partly Drained/Ditched	2 Euhaline	8 Eusaline	t Circumneutral	n Mineral
C Seasonally Flooded	N Regularly Flooded	T Semipermanently Flooded-Tidal	f Farmed	3 Mixohaline (Brackish)	9 Mixosaline	i Alkaline	
E Seasonally Flooded/ Saturated	P Irregularly Flooded	V Permanently Flooded-Tidal	h Diked/Impounded	4 Polyhaline	0 Fresh		
F Semipermanently Flooded			r Artificial	5 Mesohaline			
G Intermittently Exposed			s Spoil	6 Oligohaline			
H Permanently Flooded			x Excavated	0 Fresh			
J Intermittently Flooded							
K Artificially Flooded							

WETLANDS AND DEEPWATER HABITATS CLASSIFICATION







Site Photographs



Photo 1. View south from the north end of Wetland A.



Photo 2. View north from the western boundary of Wetland A, towards the developed/manicured area.



Photo 3. The current pier acts as a dividing line between the muddy and cobble-gravel substrate sections of Wetland A.



Photo 4. Wetland A north of the pier has a cobble-gravel substrate strewn with old bricks.



Photo 5. View north of the emergent marsh section of Wetland A.



Photo 6. View south from the emergent marsh section of Wetland A.



Photo 7. Several small culverts drain to the west end of Wetland A.



Photo 8. View north of the emergent portion of Wetland A upon becoming inundated during the field investigation.

Completed Wetland Function-Value Evaluation Form

Wetland Function-Value Evaluation Form

Total area of wetland: n/a Human made?: No Is wetland part of a wildlife corridor?: No or a "habitat island"?: No

Adjacent land use: Industrial facility Distance to nearest roadway or other development: Immedeately adjacent

Dominant wetland systems present: Estuarine Contiguous undeveloped buffer zone present: No

Is the wetland a separate hydraulic system?: No If not, where does the wetland lie in the drainage basin?: Low - coastal

How many tributaries contribute to the wetland?: n/a Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D.: Wetland A

Latitude: 43.64235 Longitude: 70.279119

Prepared by: KR & SL Date: 6 June 2023

Wetland Impact:
Type: _____ Area: _____

Evaluation based on:
Office: Yes Field: Yes

Corps manual wetland delineation completed? Y: x N: _____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N			
Floodflow Alteration	Y	3,4,5,9,11		
Fish and Shellfish Habitat	Y	1,3,4	Y	Wetland is a coastal mudflat.
Sediment/Toxicant Retention	Y	1,2,4,7,8,9		
Nutrient Removal	Y	2,4,5,6,7		
Production Export	Y	1,4,6	Y	
Sediment/Shoreline Stabilization	Y	1,3,5,10,11		
Wildlife Habitat	Y	8,16,21	Y	Observed waterfowl and fish using wetland.
Recreation	Y	2,5,12		
Educational/Scientific Value	Y	2,5,14		
Uniqueness/Heritage	Y	1,13,14,17,19,20	Y	
Visual Quality/Aesthetics	Y	2,6,8,11,12		
ES Endangered Species Habitat				Unknown.
Other				

Notes:

* Refer to backup list of numbered considerations.

Completed Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: IDEALS - Roux Institute City/County: Portland/Cumberland Sampling Date: 6 June 23

Applicant/Owner: Woodard & Curran State: ME Sampling Point: A-1 (wet)

Investigator(s): Kevin Ryan and Sarah Large Section, Township, Range:

Landform (hillside, terrace, etc.): Coast Local relief (concave, convex, none): Concave Slope %: 1

Subregion (LRR or MLRA): LRR R Lat: Long: Datum:

Soil Map Unit Name: Cut and Fill NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X	No	If yes, optional Wetland Site ID:
Wetland Hydrology Present?	Yes X	No	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No	Depth (inches): 4
Water Table Present?	Yes X	No	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No	Depth (inches): 0

Wetland Hydrology Present? Yes X No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Plot becoming inundated by tide at time of data collection.

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VEGETATION – Use scientific names of plants.

Sampling Point: A-1 (wet)

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5)			
1. *Spartina alterniflora*	50	Yes	OBL
2. *Limonium carolinianum*	10	No	OBL
3. *Salicornia depressa*	5	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	65 =Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	65	x 1 =	65
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	65 (A)		65 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

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SOIL Sampling Point A-1 (wet)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 2.5/1	100					Loamy/Clayey	Silty clay loam
4-8	2.5Y 4/1	75	7.5YR 5/6	25	C	M	Loamy/Clayey	Prominent redox concentrations
8-16	2.5Y 4/1	60	7.5YR 5/6	40	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

US Army Corps of Engineers Northcentral and Northeast Region – Version 2.0

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: IDEALS - Roux Institute City/County: Portland/Cumberland Sampling Date: 6 June 23

Applicant/Owner: Woodard & Curran State: ME Sampling Point: A-1 (up)

Investigator(s): Kevin Ryan and Sarah Large Section, Township, Range:

Landform (hillside, terrace, etc.): Coast Local relief (concave, convex, none): Concave Slope %: 1

Subregion (LRR or MLRA): LRR R Lat: Long: Datum:

Soil Map Unit Name: Cut and Fill NWI classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	If yes, optional Wetland Site ID:
Wetland Hydrology Present?	Yes ____	No X	

Remarks: (Explain alternative procedures here or in a separate report.)
Plot is in manucured lawn just west of Wetland A

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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VEGETATION – Use scientific names of plants.

Sampling Point: A-1 (up)

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Picea abies*	10	Yes	UPL
2. *Thuja occidentalis*	10	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	20	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *None*			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Trifolium repens*	30	Yes	FACU
2. *Achillea millefolium*	30	Yes	FACU
3. *Poa sp.*	30	Yes	
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	60	x 4 =	240
UPL species	10	x 5 =	50
Column Totals:	80 (A)		310 (B)

Prevalence Index = B/A = 3.88

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)
Plot is on manicured lawn.

US Army Corps of Engineers

Northcentral and Northeast Region – Version 2.0

SOIL Sampling Point A-1 (up)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	7.5YR 3/2	100					Loamy/Clayey	Sandy Loam
20-22	7.5YR 4/4	100					Loamy/Clayey	Sandy Loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

US Army Corps of Engineers Northcentral and Northeast Region – Version 2.0

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

In Reply Refer To:
Project Code: 2023-0113655
Project Name: IDEALS Phase 1

October 30, 2023

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 threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The 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 IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the 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/or 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 and/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:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

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 Code 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
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

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

Project Code: 2023-0113655
Project Name: IDEALS Phase 1
Project Type: Acquisition of Lands
Project Description: Phase 1
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.67886365,-70.25460066402678,14z



Counties: Cumberland County, Maine

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 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.

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

BIRDS

NAME	STATUS
Roseate Tern *Sterna dougallii dougallii* Population: Northeast U.S. nesting population No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2083	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

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

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

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

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

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

THERE ARE NO BALD AND GOLDEN EAGLES WITHIN THE VICINITY OF YOUR PROJECT AREA.

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

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

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Black Guillemot *Cepphus grylle* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10412	Breeds May 15 to Sep 10
Black Scoter *Melanitta nigra* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10413	Breeds elsewhere
Common Eider *Somateria mollissima* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10457	Breeds Jun 1 to Sep 30
Common Loon *gavia immer* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/4464	Breeds Apr 15 to Oct 31
Great Shearwater *Puffinus gravis* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/9634	Breeds elsewhere
Long-tailed Duck *Clangula hyemalis* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/7238	Breeds elsewhere
Razorbill *Alca torda* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10461	Breeds Jun 15 to Sep 10
Red Phalarope *Phalaropus fulicarius* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10469	Breeds elsewhere

NAME	BREEDING SEASON
Red-breasted Merganser *Mergus serrator* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10693	Breeds elsewhere
Red-throated Loon *Gavia stellata* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/9589	Breeds elsewhere
Ring-billed Gull *Larus delawarensis* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10468	Breeds elsewhere
Roseate Tern *Sterna dougallii* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10661	Breeds May 10 to Aug 31
Surf Scoter *Melanitta perspicillata* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10463	Breeds elsewhere
Thick-billed Murre *Uria lomvia* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10700	Breeds Apr 15 to Aug 15
White-winged Scoter *Melanitta fusca* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10462	Breeds elsewhere
Wilson's Storm-petrel *Oceanites oceanicus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/10416	Breeds elsewhere

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read the supplemental information and specifically the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

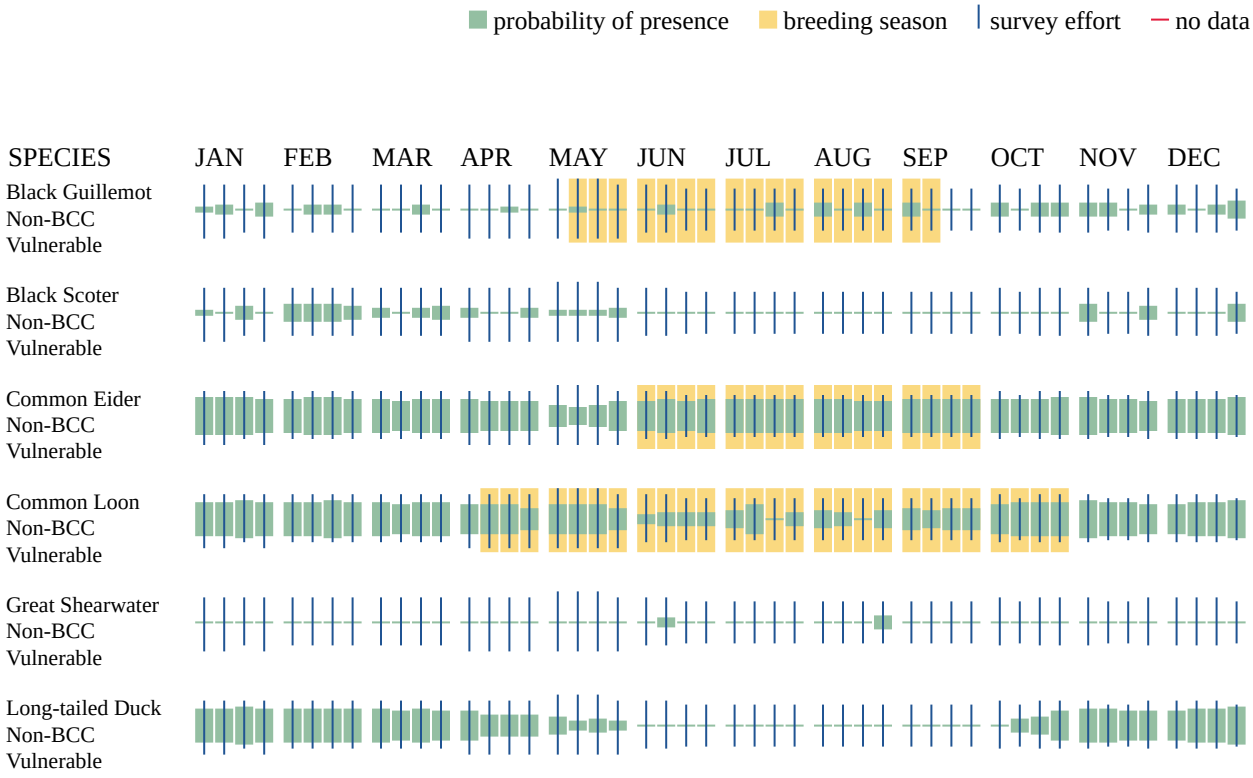
Probability of Presence (■)

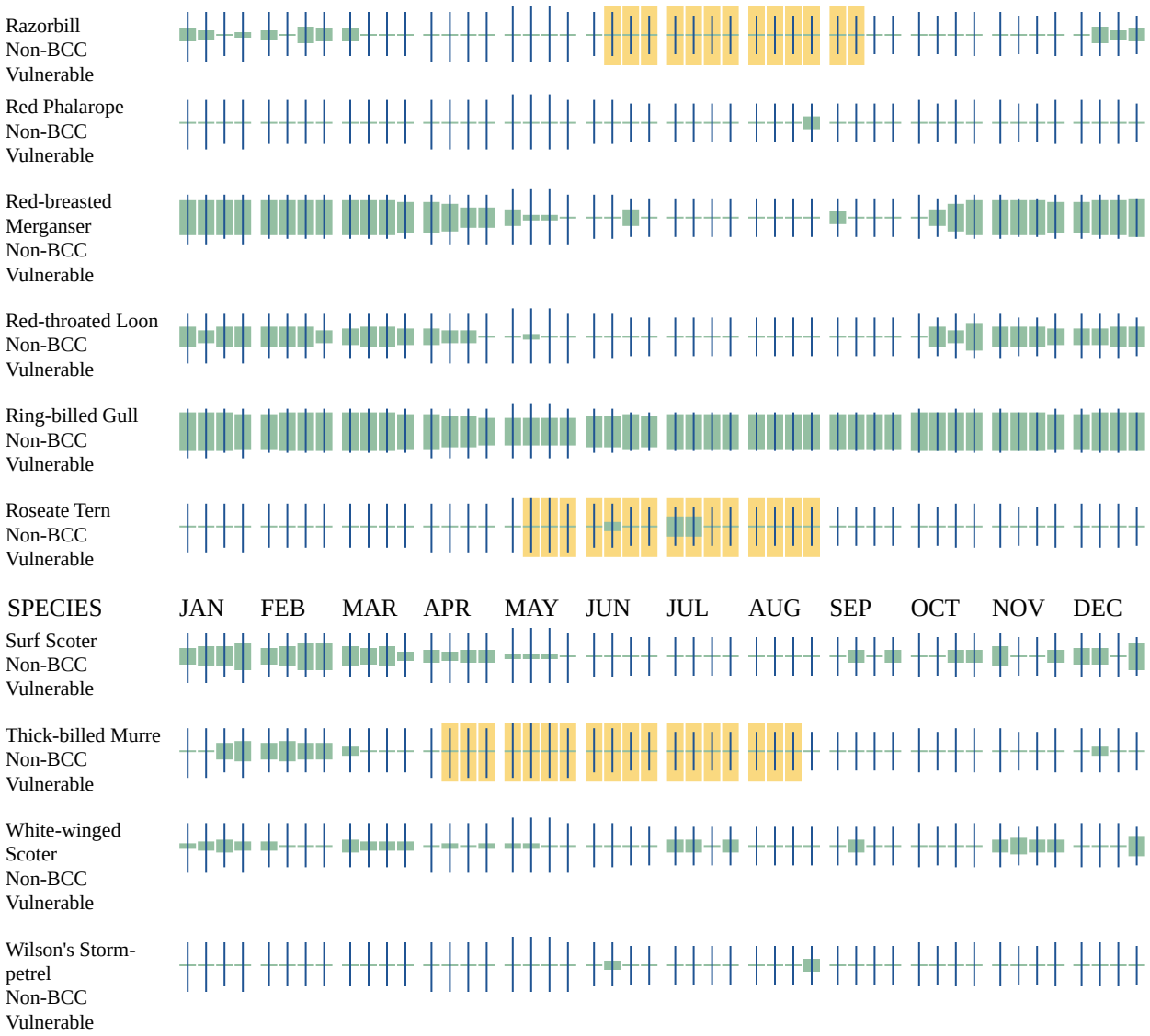
Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.





Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

WETLANDS

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

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

ESTUARINE AND MARINE WETLAND

- E2US2P
- E2US3N

ESTUARINE AND MARINE DEEPWATER

- E1UBL

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Julianna Monts
Address: 41 Hutchins Drive
City: Portland
State: ME
Zip: 01402
Email jmonts@woodardcurran.com
Phone: 9175753387

12 Mountfort Street
Portland, Maine 04101
www.woodardcurran.com

T 800.426.4262
T 207.774.2112
F 207.774.6635

November 2023

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

RE: The Roux Institute at Northeastern University Phase 1 – Environmental Review Request

To Whom It May Concern:

Northeastern University and their agent, Initiative for Digital Engineering and Life Sciences (IDEALS), propose to develop a mixed-use post-graduate campus at 1 Bean Pot Circle in Portland, Maine. The project site was formerly owned by Burnham & Morrill (B&M) and previously developed for industrial food manufacturing operations. The site is primarily impervious and comprised of buildings, parking, and driveways, with vegetation along the site perimeter and waterfront. To enable future phases of development, abatement and demolition of existing industrial buildings has commenced. The proposed work for Phase 1 includes the construction of the Learning, Research, and Collaboration Building, renovation of the Bean Building, construction of a parking garage, development of a childcare facility, replacement of the pier, development of a coastal path, and other site improvements.

The proposed work will require a Maine Department of Environmental Protection Site Location of Development Permit, which requires coordination with the Maine Department of Inland Fisheries and Wildlife. On behalf of Northeastern University and IDEALS, we are requesting a review of the project area for any known threatened or endangered species or critical habitat. A Site Location Map and Overall Site Plan have been attached for your reference.

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 207-558-3841 or alebel@woodardcurran.com. Thank you for your assistance.

Sincerely,

WOODARD & CURRAN

Amy N LeBel

Amy LeBel, P.E.
Project Engineer

Enclosures: Site Location Map
Overall Site Plan

8. HISTORIC SITES

The proposed development will not adversely affect any historic sites, historic structures or archaeological sites. The Site was occupied by residences and a lobster cannery prior to 1913, when Burnham & Morrill (B&M) relocated its food manufacturing operations to the Site from Franklin Street. Shortly thereafter, the flagship Cannery Building (Bean Building) was constructed, as well as the adjacent codfish building on the pier. The site was further improved with buildings and parking to support operations. Canning operations ceased in 2021.

In 2022, IDEALS submitted a nomination to the City's Historic Preservation Board to designate the Bean Building as a local landmark. The five-story 1913 Bean Building was designated as a landmark by the City Council on October 17, 2022. During the Historic Preservation process, it was determined that the existing Codfish Building and pier were unsalvageable and will be demolished. This development Application proposes construction of a new pier in its place.

On May 23, 2023, IDEALS received a demolition permit from the City and commenced demolition of all existing buildings on the Site, retaining only the Bean Building and the Codfish Building.

An application will be submitted to the City of Portland Historic Preservation Board for improvements to the Cannery Building and interpretive elements on the new pier to honor the former Codfish Building.

The demolition of the Codfish Building and construction of the pier will require a Natural Resources Protection Act (NRPA) permit from the Maine Department of Environmental Protection. We will be coordinating with Maine Historic Preservation Commission (MHPC) in connection with the NRPA permit and will provide the City with relevant findings by MHPC regarding historic sites, structures or archaeological sites.

9. UNUSUAL NATURAL AREAS

The Site has been previously developed and there are no known unusual natural areas. A letter was sent to the Maine Natural Areas Program (MNAP) requesting a review of the Site relative to rare and exemplary botanical features; a copy of the review request letter is attached to this Section.

9.1 LIST OF ATTACHMENTS

- MNAP Site Review Request Letter.

12 Mountfort Street
Portland, Maine 04101
www.woodardcurran.com

T 800.426.4262
T 207.774.2112
F 207.774.6635

November 2023

Maine Natural Areas Program
177 State House Station
Augusta, ME 04333-0177

RE: The Roux Institute at Northeastern University Phase 1 – Site Review Request

To Whom It May Concern:

Northeastern University and their agent, Initiative for Digital Engineering and Life Sciences (IDEALS), propose to develop a mixed-use post-graduate campus at 1 Bean Pot Circle in Portland, Maine. The project site was formerly owned by Burnham & Morrill (B&M) and previously developed for industrial food manufacturing operations. The site is primarily impervious and comprised of buildings, parking, and driveways, with vegetation along the site perimeter and waterfront. To enable future phases of development, abatement and demolition of existing industrial buildings has commenced. The proposed work for Phase 1 includes the construction of the Learning, Research, and Collaboration Building, renovation of the Bean Building, construction of a parking garage, development of a childcare facility, replacement of the pier, development of a coastal path, and other site improvements.

The proposed work will require a Maine Department of Environmental Protection Site Location of Development Permit, which requires coordination with the Maine Natural Areas Program. On behalf of Northeastern University and IDEALS, we are requesting information on rare and exemplary botanical features in the project area. A site location map has been attached for your reference.

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 207-558-3841 or alebel@woodardcurran.com. Thank you for your assistance.

Sincerely,

WOODARD & CURRAN

Amy N LeBel

Amy LeBel, P.E.
Project Engineer

Enclosure: Site Location Map

10. BUFFERS

The Site has been previously developed. There are no existing or proposed buffer strips. However, Interstate I-295 borders the project to the west and will act as a buffer to the Site. Existing buffers of plantings at property lines will be maintained or replaced where appropriate.

11. SOILS

Copies of the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey are attached to this Section for your reference. Environmental assessments of the Site have been conducted and a soil management plan has been developed for the Site.

11.1 LIST OF ATTACHMENTS

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



Map Scale: 1:2,840 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 40 80 160 240

Feet: 0 100 200 400 600

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 19, Aug 30, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

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
BuB	Lamoine silt loam, 3 to 8 percent slopes	0.9	4.5%
Cu	Cut and fill land	15.9	77.8%
W	Water	3.6	17.7%
Totals for Area of Interest		**20.4**	**100.0%**

12. STORMWATER MANAGEMENT

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

For a site that had previously seen no stormwater quality or quantity treatment or management other than some limited collection systems, the proposed stormwater management system will reduce the impact of stormwater on surrounding resources. The proposed stormwater management system has been designed to adequately capture, convey, and treat stormwater runoff, as demonstrated in the Stormwater Management Report uploaded under separate cover.

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 proposed development is adjacent to Casco Bay; there are no other known protected resources associated with the Site. As shown in the soil survey attached to Section 11 of this Report, the Site is comprised primarily of urban fill. The Soil Erosion and Sediment Control Plan and compliance with the Basic Standard is described in the Stormwater Management provided as part of Section 12 of this Report.

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 of the permit approvals, 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 Owner will be responsible for inspecting and maintaining the Site's stormwater system.

14.1 LIST OF ATTACHMENTS

- 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; as previously noted, the Site is comprised primarily of urban fill. The proposed development will not infiltrate or extract groundwater. It is not anticipated that the proposed development will result in any impacts to groundwater.

16. WATER SUPPLY

The proposed development will be provided with both fire protection water service and domestic water service as shown on the drawings via a private water system that will connect to the public water main on Sherwood Street. Woodard & Curran is working directly with the Portland Water District to determine the appropriate design for this work. The ability to serve documentation for Phase 1 will be provided upon receipt.

17. WASTEWATER DISPOSAL

The proposed development will be provided with sanitary sewer service as shown in the drawings. The private sanitary sewer system will flow via gravity to the public sewer along the I-295 corridor, similar to existing conditions. The proposed development will include kitchens and parking garages; grease traps and oil/water separators will be provided as shown in the drawings. A Wastewater Capacity Application has been submitted to Public Works, and a copy of the City's determination of ability to serve will be provided upon receipt.

18. SOLID WASTE

18.1 SOLID WASTE

Adequate provisions for recycling and solid waste disposal have been made. All solid waste materials and recyclables generated by the proposed development will be transported and disposed of or recycled in accordance with applicable laws and regulations. Solid waste will be managed in full accordance with all applicable laws and regulations.

18.2 CONSTRUCTION & DEMOLITION DEBRIS

The proposed development will generate construction waste and demolition debris (CDD). The Contractor will be responsible for properly disposing of the CDD. The Contractor will be responsible for handling, managing, and disposing of all waste generated by construction in accordance with the Maine Solid Waste Management Regulations and all other applicable local, state, and federal regulations.

18.3 SPECIAL & HAZARDOUS WASTE

Environmental assessments of the Site have been conducted and a soil management plan has been developed for the Site. Hazardous building materials of the existing structures will be appropriately managed during the remaining demolition and upcoming renovation activities.

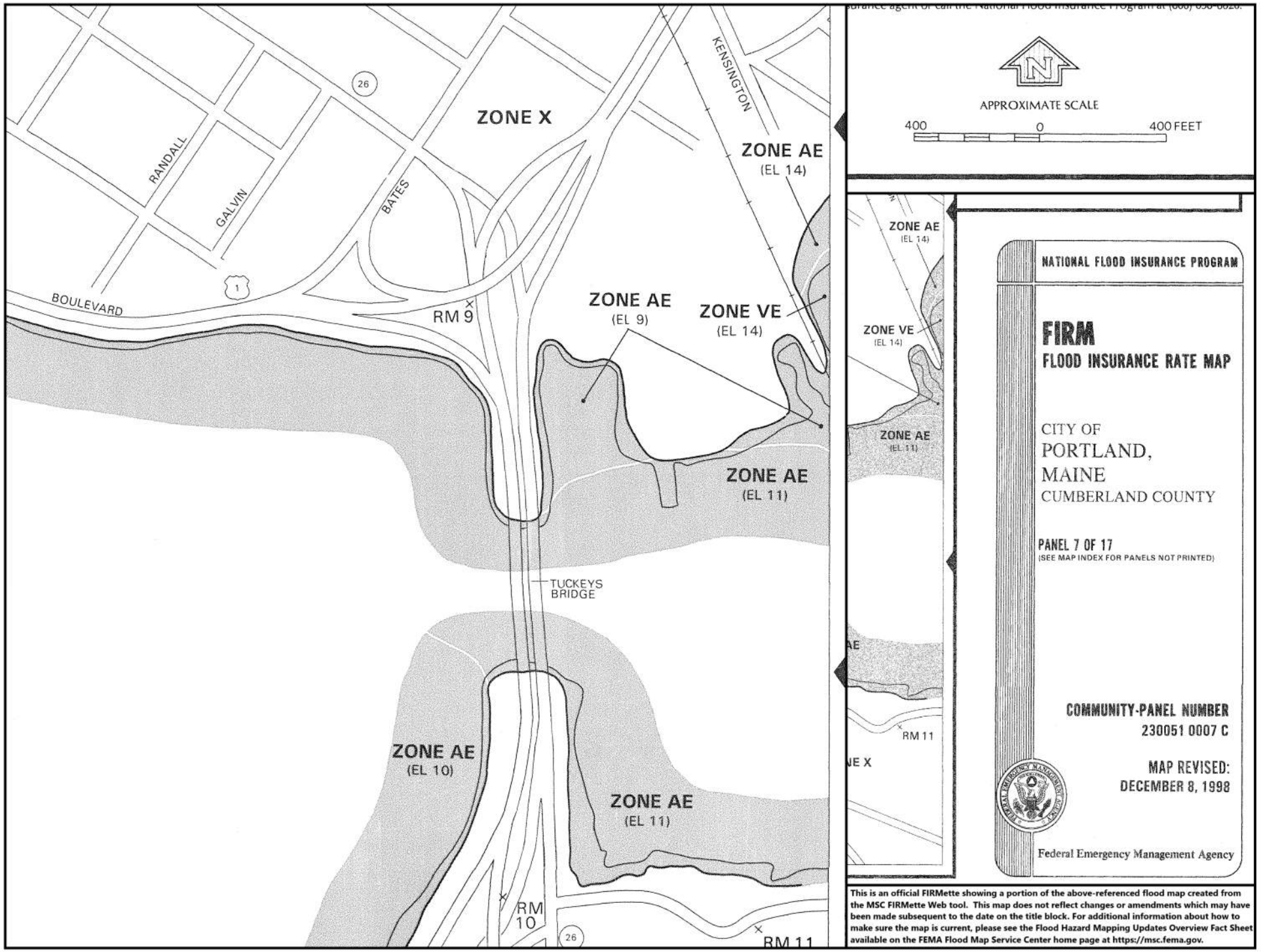
The Learning, Research, and Collaboration Building contains lab spaces which will use controlled, code-compliant quantities of hazardous materials for research purposes. The strategy related to the storage and use of hazardous materials within the building consists of compartmentalization into multiple control areas per the building code and laboratory units per NFPA 45. Chemical quantities throughout will be maintained below Maximum Allowable Quantities allowed for this construction type and use group. Centralized storage and waste rooms are included in the base building design for tenant storage of flammable and combustible liquids as well as other hazardous chemicals (corrosives, toxics, etc.) to facilitate shipping/receiving. The rooms are compliant with the requirements of quantity, separation, mechanical ventilation, explosion control, fire protection and secondary containment. Laboratory areas will be used for educational, research, and development purposes involving the storage and use of hazardous chemicals and are compliant with the following sections: quantity, container size, separation, mechanical ventilation, fire protection, floor openings and egress.

19. FLOODING

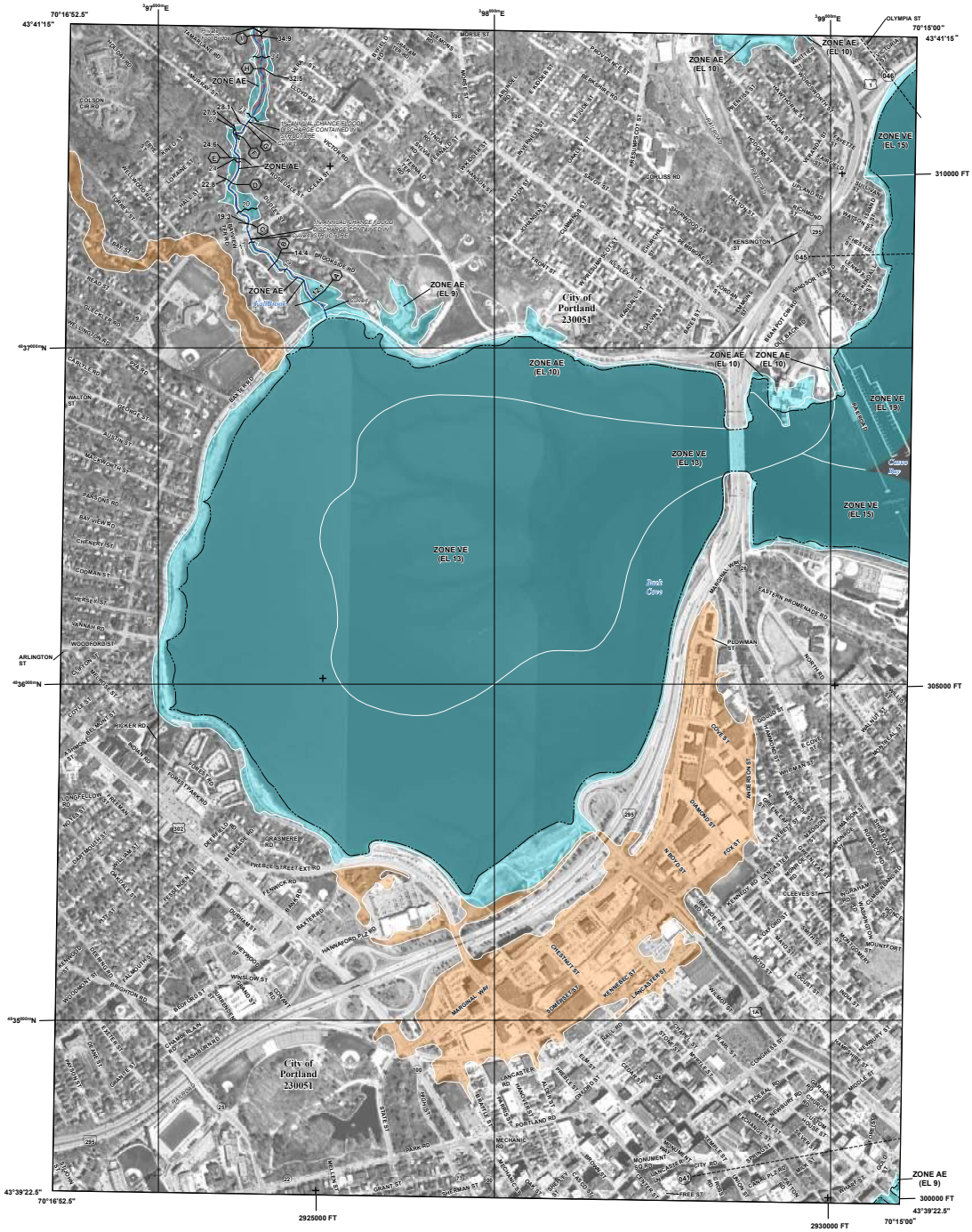
Portions of the Site are delineated as Special Flood Hazard Areas according to FEMA's Flood Insurance Rate Map (FIRM), attached to this Section. An application for a Flood Hazard Development Permit is being submitted to the City of Portland. The proposed development will not cause or increase flooding or cause an unreasonable flood hazard to any adjacent structures. The flood zones are located along the southern portions of the proposed development, as shown on the Design Drawings.

19.1 LIST OF ATTACHMENTS

- FEMA Flood Insurance Rate Map.



This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) *Zone A,V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS

- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM provided in digital format by State of Maine, Maine office of GIS (MeGIS). This information was derived from MeGIS, dated 2012.

The map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and FDTs may reflect stream channel distances that differ from what is shown on the map.

SCALE

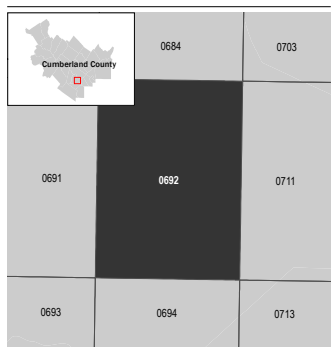
Map Projection:
NAD 1983 UTM Zone 19N;
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

CUMBERLAND COUNTY, MAINE

All Jurisdictions

PANEL 0692 OF 0837

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
PORTLAND, CITY OF	230051	0692	F

REVISED PRELIMINARY 4/14/2017

VERSION NUMBER 2.3.2.1

MAP NUMBER 23005C0692F

EFFECTIVE DATE

20. BLASTING

S.W. Cole Engineering, Inc., the geotechnical engineer for the project, has confirmed that based on investigations completed to date, no blasting is anticipated for this project.

21. AIR EMISSIONS

No significant air emissions are anticipated for the project. Permitting for emergency generators will be completed prior to issuance of building permits.

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

Roux LRC, Bean Building, Site & Future Development Charter

	Commitment	Applicability	Strategies
Code mandated items			
Energy	Design the building to achieve the energy requirements of IECC 2021 (ASHRAE 90.1-2019).	All buildings	Meet code applicable at time of permitting.
Responsible Materials	Specify, at a minimum, PFAS free carpet, rugs, and fabrics to align with the State of Maine's PFAS ban.	All buildings	Utilize PFAS free carpets.
Occupant Experience	Provide mechanical or mixed mode ventilation to all residential units.	All buildings	Provide ERVs or other energy efficient ventilation systems to each regularly occupied space.
	Commitment	**Applicability**	**Strategies**
Energy			
	Eliminate on-site fossil fuels in building HVAC and Food service.	All buildings	All electric mechanical systems utilizing efficient equipment such as ASHPs and energy recovery ventilators.
		All buildings	Eliminate the combustion of fossil fuels on-site except for emergency backup power and non-permanently installed equipment.
		All buildings	All electric domestic hot water.
	Provide infrastructure for future PV installation.	All buildings	Identify location for future PV equipment in building. Provide conduit from roof to central electrical room.
	Design the building to be 30% better than ASHRAE 90.1-2019 and 15% of roof area dedicated for PV.	The LRC	Utilize geothermal HVAC system and on/off site PV to achieve aggressive energy targets for project.
Embodied Carbon			
	Reuse existing historic building.	Bean Building	Efficient engineering to optimize material selection.
	Advocate for Environmental Product Declarations (EPDs) for all concrete used on the project.	All buildings	Design and construction team to work with suppliers and request EPDs are generated. Availability of EPDs will be included in procurement decisions.
	Perform a whole building life cycle analysis (LCA) to study carbon conservation measures.	All Buildings	Quantify the embodied carbon of project by completing an LCA.
	Reduce the embodied carbon of structural materials in the building by 15% from a typical design. Demonstrate a reduction of at least 10% for building embodied carbon.	The LRC	Utilize Mass Timber for a portion of building .
		The LRC	Utilize interior materials with lower than average carbon footprint.
Responsible Materials			
	Source wood products from Maine forests and/or sustainably managed forests or salvaged/reclaimed wood suppliers.	All buildings	Wood products sourced from sustainable managed forests will be prioritized. Wood sourcing considerations will be included in procurement decisions.
		All buildings	Utilize Maine products to the maximum extent possible. Wood sourcing considerations will be included in procurement decisions.
	Advocate for the removal of PFAS chemicals in other targeted product categories.	Bean Building	Team to identify targeted categories. PFAS content will be included in procurement decisions.
	In coordination with the contractor, identify key materials to procure from the state of Maine.	All buildings	Team to identify targeted categories. Sourcing availability content will be included in procurement decisions.
	Divert at least 50% of no-hazardous construction and demolition waste from the landfill.	All buildings	Source separate construction and demolition waste.
		All buildings	Include requirements in contract with waste hauler.
		Site areas	Identify opportunities for reuse/salvage of existing materials.
	Target Red List free finishes in targeted spaces.	The LRC	Classrooms and offices will target red list free flooring, ceilings, and furniture.
	Use best practices for bird friendly design.	The LRC	Include bird safe glass and design measures to reduce bird strike hazards.

Water			
	Reduce indoor water use from 25% from a code baseline building.	All buildings	Select high efficiency, low flow plumbing fixtures for all spaces with lower then code flow rates.
		Public spaces	Maximize the use of urinals while providing gender inclusive restrooms.
	Maximize the use of native and drought tolerant landscape plants.	Associated Site areas	Landscaping to be primarily drought tolerant native woody, perennial, or meadow mix plants requiring minimal irrigation after establishment and during severe/extended drought events.
	Stormwater Management in accordance with Maine Department of Environmental Protection Best Management Practices Manual and City of Portland Technical Manual.	Site Areas	Incorporate Low Impact Development Design Strategies and Stormwater Quality Treatment Systems.
	Prohibit the use of all synthetic pesticides and fertilizers for the operation and maintenance of landscape and agriculture through Integrated pest management (IPM)conducted as part of an overall Plant Health Care Program for the Roux site.	Site Areas	Consideration will be given, during the initial site design, to plants that require fewer chemical inputs for both establishment and long-term maintenance needs. This includes anticipated needs that will likely arise as the landscape itself evolves and matures.
Occupant Experience & Equity			
	Optimize natural daylight and mitigate glare.	All buildings	Provide shades or curtains at all regularly occupied spaces which face east, west, or south.
	Incorporate biophilic design principles.	All buildings	Use of natural materials.
		The LRC & Bean Buildings	Create cultural and ecological connections to place - art and signage.
	Use the building to educate building and site users.	The LRC & Bean Buildings	Incorporate signage that tells about sustainability features of building.
	Provide amenities to support public access.	All buildings	Provide drinking fountains and/or bottle fillers.
		All buildings	Provide publicly accessible restrooms adjacent to public spaces.
		Site Areas	Provide bike/pedestrian paths.
		Site Areas	Provide benches.
		Site Areas	Provide site wayfinding.
	Provide Gender inclusive restrooms.	All buildings	Provide gender inclusive restrooms in public areas.
	Provide lactation rooms.	The LRC & Bean Buildings	Provide a designated lactation room with a locking door, sink, changing table, comfortable seating, lighting control and electrical outlets.
Transportation			
	Conduct study of EV charging needs. Provide required EV capacity to meet anticipated demand.	Campus	Work with city to determine appropriate approach to EV charging strategy and identify percentage of day one EV charging stations and future infrastructure requirements.
		Site Areas	Provide EV charging to meet demand identified in coordination with PV requirements approved by city.
		Site Areas	Annually evaluate the EV charging capacity needs by the campus.
	Integrate quality/ secure bicycle storage into the site design and provide shower facilities.	Residential buildings	Provide at least one bike storage space per four units.
		The LRC & Bean Buildings	Provide secure bicycle storage.
		Bean Building	Provide shower facilities for bike commuters.
		Site Areas	Provide Portland Bike Share stations.
		Site Areas	Provide quality and dispersed bike parking for site users near each building.
	In collaboration with the surrounding community, work to improve multi-modal transportation to the Roux Site.	Community	Maximize non single occupancy vehicle transportation to the site, by charging for parking, working with Metro and/or shuttle services to efficiently connect the site to key city locations, encourage bike and pedestrian access, and enabling water taxi service.

Resilience			
	Incorporate near-term future-projected climate change data (2050s) in design of mechanical, electrical, and plumbing systems and/or components on a regular replacement cycle. Incorporate long-term future-projected climate change data (2100+) in the design of the building and infrastructure, including flood resistant materials below the 2100 sea level rise design flood elevation and elevate critical infrastructure above this elevation.	All New buildings	All critical building infrastructure shall be located above the design flood elevation (DFE) of 22.5ft NAVD88.
		All buildings	Review the extreme heat projections with MEP consultant for consideration of future cooling degree days. Allow additional cooling and heating capacity. Utilize weather shift model anticipating conditions in year 2050 for calculations.
	Prepare emergency action plan and provide appropriate level of backup power to support life safety. Incorporate campus-wide emergency preparedness planning to enhance overall resilience of the campus/site community.	The LRC & Bean Buildings	Provide emergency generator with capacity to support essential operations such as research requirements in addition to life safety for 48 hours.
		Student Housing	Developer to provide emergency generator with capacity to support operations including food service and life safety for 48 hours.
		All buildings	Provide campus wide emergency preparedness plan and coordinate with local jurisdictions.
		All other	Provide emergency generator.

7. PUBLIC INFRASTRUCTURE AND SAFETY STANDARDS (14.6.3)

Compliance with the City of Portland's Land Use Code Section 14.6.3 Public Infrastructure and Safety Standards is described in the following sections.

7.1 Public Safety and Fire Prevention

Provisions for public safety have been incorporated into the design of site visibility, access, and security. Adequate emergency vehicle access is provided via Sherwood Street and internal driveways. The consulting team has met with Portland Fire Department and Police Department during development of the design drawings and will continue to coordinate site design in consideration of public safety and emergency access.

7.1.1 Portland Fire Department Site Review Checklist

The items in the Portland Fire Department Site Review Checklist are addressed as follows:

- Name, address, and telephone number of applicant:
  - Northeastern University, c/o Catherine Walsh
    - 360 Huntington Ave 216-201, Boston, MA 02115
    - (617) 594-6092
- Name, address, telephone number of agent:
  - IDEALS, c/o Sam Reiche
    - 100 Commercial Street, Suite 400, Portland, ME 04101
    - (207) 939-6308
- Name, address, telephone number of architect:
  - The Learning, Research & Collaboration Building
    - Cambridge Seven Associates, c/o Patti Intrieri
    - 1050 Massachusetts Avenue, Cambridge, MA 02138
    - (617) 797-2603
  - The Bean Building
    - Bruner/Cott & Associates, c/o Greg Russell
    - 225 Friend St, Suite 701, Boston, MA 02114
    - (781) 354-2411
- Proposed uses of any structures [NFPA and IBC classification]:

  The proposed uses for Phase 1 are consistent with the IOZ regulatory framework, and include development of a Post Secondary School, with associated laboratory, research, office space, and café'; restoration of the historic Bean Building to allow for creation of business incubator space; parking structure and childcare facility. All buildings will be designed in accordance with the following codes:

- Upcoming Maine Uniform Building and Energy Code (MUBEC) Section 4 which is an amended version of the 2021 International Building Code (IBC).
- City of Portland Building Code, as adopted by City of Portland Code of Ordinances Chapter 6, Article II.
- Life Safety: 2018 Edition of NFPA 101, Life Safety Code (LSC) as adopted and amended by the Rules of the State Fire Marshal and City of Portland Code of Ordinances Chapter 10 Article I.
- Fire: 2018 Edition of NFPA 1, Fire Code as adopted by the Rules of the State Fire Marshal and the City of Portland Code of Ordinances Chapter 10 Article II.
- Electrical: 2020 NFPA 70, National Electric Code.
- Elevator: Maine Elevator & Tramway Rules & Laws, an amended version of the ASME A.17.1, Safety Code Fore Elevators and Escalators.
- Energy Code: 2021 International Energy Conservation Code (IECC), including City of Portland Stretch Energy Code requirements.
- Mechanical: 2021 International Mechanical Code (IMC).
- Plumbing: Maine State Plumbing Code (MSPC) based on 2021 Uniform Plumbing Code/
- Accessibility Regulations: 2017 ICC A117.1, Accessible and Usable Buildings and Facilities and the 2010 ADA Standards for Accessible Design.
- Other Various National Fire Protection Association (NFPA) codes and standards as referenced by the codes listed above.

  Life Safety Plans and IBC Classification details will be provided prior to submission of a building permit.

- Learning, Research, and Collaboration Building has the following occupancies:
  - Group B/Business
  - Group A-2/Assembly
  - Group A-3/Assembly
  - Group S-1/Storage

- Bean Building has the following occupancies:
  - Group B/Business
  - Group A-3/Assembly
  - Group S-1/Storage

- Parking Garage has the following occupancies.
  - Group S-2/Storage

- Childcare has the following occupancies:
  - Group E/Daycare or Group I-4/Daycare

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

- The square footage of all structures is provided on the architectural plans.

- Elevations of all structures:
  - The elevations of all structures are provided on the architectural plans.
- Proposed fire protection of all structures:
  - All structures shall be sprinkled.
- Hydrant locations:
  - Hydrant locations are shown on the Utility Plan.
- Water main size and location:
  - Watermain locations and sizes are shown on the Utility Plan.
- Access to all structures:
  - Emergency access to structures and waterfront are reflected in Section 5, **Figure 5-2**.
- A code summary shall be included referencing NFPA 1 and all fire department technical standards:
  - The buildings will be compliant with requirements of NFPA 101: Uniform Fire Code. Automatic sprinkler systems and fire alarms will be provided as required by Use and Occupancy types.

7.2 Availability and Adequate Capacity of Public Utilities

The proposed development will be serviced by public water, sewer, and electric utilities. B&M's facilities required utility infrastructure sized appropriately for industrial use. Fortunately, this sizing translates well to redevelopment of the Site by Northeastern University. Locations of proposed utility services are shown on the Utility Plan included in the Design Drawings.

7.2.1 Water

Domestic and fire protection services are provided by Portland Water District's (PWD) infrastructure at Sherwood Street. The public water mains nearest to the Site are 8-inch and 12-inch, consisting of ductile iron and cast iron. The Site is and will continue to be serviced by a combined domestic / fire protection loop.

The proposed development will be provided with both fire protection water service and domestic water service as shown on the drawings via a private water system that will connect to the public water main on Sherwood Street. Woodard & Curran is working directly with the Portland Water District to determine the appropriate design for this work. The ability to serve documentation for Phase 1 will be provided upon receipt.

7.2.2 Sewer

Wastewater will continue to discharge to a gravity public sewer along the I-295 corridor. Downstream of the service connection, public sewer transitions from 15-inch to 48-inch reinforced concrete gravity line conveying combined storm and sanitary sewer from the East Deering neighborhood west of I-295. The 48-

inch combined sewer transitions to a 3-barrel (two 18-inch and one 30-inch) siphon along Tukey's bridge and discharges through a pumping station prior to treatment at the East End Wastewater Treatment Facility.

Wastewater is conveyed across a portion of the Site near Sherwood Street and I-295 from properties to the northeast (Lennox, Berwick, and Kensington Streets) via an easement benefiting PWD. This easement will remain in place unless otherwise approved by PWD.

The proposed development will be provided with sanitary sewer service as shown in the drawings. The private sanitary sewer system will flow via gravity to the public sewer along the I-295 corridor, similar to existing conditions. The proposed development will include kitchens and parking garages; grease traps and oil/water separators will be provided as shown in the drawings. A Wastewater Capacity Application has been submitted to Public Works, and a copy of the City's determination of ability to serve will be provided upon receipt.

7.2.3 Gas

No natural gas use is proposed for the campus. Unitil currently provides natural gas service to the Site via a 6-inch diameter service. The existing gas service will be selectively demolished and decommissioned consistent with Unitil's standards.

7.2.4 Electric and Telecommunications

Central Maine Power provides electric power via an overhead 12.47kV 3-phase distribution system to the Site. The facility has two main secondary metered services. Fiber-optic internet is located along Veranda Street and Sherwood Street. The proposed development will utilize underground electric and telecommunication services. Proposed electrical and telecommunications infrastructure is shown on the Utility Plan. Energy-saving technologies will be incorporated into building and campus design to reduce electricity consumption and advance sustainability goals. The design of the electric service is being coordinated with Central Maine Power (CMP). Final electric layouts will be provided to CMP for their review and an ability to serve determination will be provided upon receipt.

7.2.5 Solid Waste

Adequate provisions for recycling and solid waste disposal have been made. All solid waste materials and recyclables generated by the proposed development will be transported and disposed of or recycled in accordance with applicable laws and regulations. Solid waste will be managed in full accordance with all applicable laws and regulations.

7.2.6 Construction & Demolition Debris

The proposed development will generate construction waste and demolition debris (CDD). The Contractor will be responsible for properly disposing of the CDD. The Contractor will be responsible for handling, managing, and disposing of all waste generated by construction in accordance with the Maine Solid Waste Management Regulations and all other applicable local, state, and federal regulations.

7.2.7 Special & Hazardous Waste

Environmental assessments of the Site have been conducted and a soil management plan has been developed for the Site. Hazardous building materials of the existing structures will be appropriately managed during the remaining demolition and upcoming renovation activities.

The Learning, Research, and Collaboration Building contains lab spaces which will use controlled, code-compliant quantities of hazardous materials for research purposes. The strategy related to the storage and use of hazardous materials within the building consists of compartmentalization into multiple control areas per the building code and laboratory units per NFPA 45. Chemical quantities throughout will be maintained below Maximum Allowable Quantities allowed for this construction type and use group. Centralized storage and waste rooms are included in the base building design for tenant storage of flammable and combustible liquids as well as other hazardous chemicals (corrosives, toxics, etc.) to facilitate shipping/receiving. The rooms are compliant with the requirements of quantity, separation, mechanical ventilation, explosion control, fire protection and secondary containment. Laboratory areas will be used for educational, research, and development purposes involving the storage and use of hazardous chemicals and are compliant with the following sections: quantity, container size, separation, mechanical ventilation, fire protection, floor openings and egress.

7.3 Section Attachments

- PWD Ability to Serve Request Letter
- Wastewater Capacity Application

12 Mountfort Street
Portland, Maine 04101
www.woodardcurran.com

T 800.426.4262
T 207.774.2112
F 207.774.6635

November 2023

MEANS Group
Portland Water District
225 Douglass Street
Portland, ME 04104

Re: The Roux Institute at Northeastern University Ph. 1 - Request for Evidence of Ability to Serve

To Whom It May Concern:

On behalf of Northeastern University and their agent, the Initiative for Digital Engineering and Life Sciences (IDEALS), Woodard & Curran is submitting this request for initial confirmation of ability to serve for use in permitting for Phase 1 of development at 1 Bean Pot Circle in Portland, Maine. The proposed work includes the construction of the Learning, Research, and Collaboration Building, renovation of the Bean Building, construction of a parking garage, development of a childcare facility, replacement of the pier, development of a coastal path, and other site improvements. Woodard & Curran will continue to work with Portland Water District for final approval.

Upon completion, this phase of the proposed site development is anticipated to require 36,700 gallons of water per day. This estimate is based on the preliminary design of the buildings. The table below summarizes B&M historic water demand and demand estimates for future phasing.

Utility*	B&M Historic Demand Reference	Phase 1 (0-5yrs)	Phase 2 (0-5yrs)	Phase 3 (10-20yrs)	Phase 4 (20+ yrs)
Water (gpd)	153,000	36,700	86,700	127,400	190,800

**Based upon preliminary load demand calculations provided by ARUP dated July 19, 2023*

The attached utility plan shows the proposed water utility locations. The existing water main in Sherwood Street is 12" and is fed from both the north and west. The campus will be served by a private water main, connected at the easternmost existing 12"x12" service tee. The private water service will extend to the Learning, Research, and Collaboration Building, Bean Building, childcare facility, pier, and parking garage for Phase 1. Future phases may extend off this service or be fed directly from Sherwood Street. A meter pit will be provided on-site near the Sherwood Street property boundary, with a Reduced Pressure Zone (RPZ) valve assembly located in nearby landscape after the meter pit. The RPZ will require an enclosure (such as a 40" wide x 144" deep x 90" tall Safe-T-Cover). The meter and RPZ can also be in an above ground structure/building.

We are submitting a Major Site Plan Application to the City of Portland Planning Department for approval and will appreciate documentation regarding the City's ability to provide water service for the proposed development. Please let us know if any additional information is required to evaluate the service capacity for the site or if you have any questions on our proposed layout. We appreciate your assistance. Please do not hesitate to contact me at 207-558-3841 or alebel@woodardcurran.com.

Sincerely,

WOODARD & CURRAN

Amy LeBel, P.E.
Project Engineer

Enclosure: Utility Plan

12 Mountfort Street
Portland, Maine 04101
www.woodardcurran.com

T 800.426.4262
T 207.774.2112
F 207.774.6635

November 2023

ATTN: Bradley Roland, P.E.
Department of Public Works
212 Canco Road
Portland, ME 04103

Re: The Roux Institute at Northeastern University Ph. 1 – Request for Evidence of Ability to Serve

Dear Mr. Roland:

On behalf of Northeastern University and their agent, the Initiative for Digital Engineering and Life Sciences (IDEALS), Woodard & Curran is submitting this request for initial confirmation of ability to serve for use in permitting for Phase 1 of development at 1 Bean Pot Circle in Portland, Maine. The proposed work includes the construction of the Learning, Research, and Collaboration Building, renovation of the Bean Building, construction of a parking garage, development of a childcare facility, replacement of the pier, development of a coastal path, and other site improvements. Woodard & Curran will continue to work with the Department of Public Works for final approval.

Upon completion, the proposed Phase 1 is anticipated to discharge 33,400 gallons of wastewater per day. This estimate is based on the preliminary design of the buildings. We do not anticipate changes that would result in significant increases but will notify the City if design development results in any major changes. The table below summarizes B&M historic wastewater demand and demand estimates for future phasing.

Utility*	B&M Historic Demand Reference	Phase 1 (0-5yrs)	Phase 2 (0-5yrs)	Phase 3 (10-20yrs)	Phase 4 (20+ yrs)
Wastewater (gpd)	90,000	33,400	78,800	115,800	173,400

**Based upon preliminary load demand calculations provided by ARUP dated July 19, 2023.*

Please refer to the enclosed Utility Plan for the location and size of proposed utility service connections. All connections proposed as part of this project will connect to the City's sewer via private site services similar to existing conditions. A grease trap is proposed external to the Learning, Research, and Collaboration Building to manage flow from the anticipated kitchen space. Oil/water separators are proposed for internal components of the parking garage as well as the loading dock area of the Learning, Research, and Collaboration Building. All wastewater will exit the site via a gravity sewer connection previously installed along the I-295 corridor.

We are submitting a Major Site Plan Application to the City of Portland Planning Department for approval and will appreciate documentation regarding the City's ability to collect wastewater from the proposed development. Please let us know if any additional information is required to evaluate the service capacity for the site. We appreciate your assistance. If you have any questions or require any additional information, please do not hesitate to contact me at 207-558-3841 or alebel@woodardcurran.com.

Sincerely,

WOODARD & CURRAN



Amy LeBel, P.E.
Project Engineer

Enclosures: Utility Plan
Wastewater Application
Demand Calculations
Locus Plan

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: **November 2023**

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

Site Address: **1 Bean Pot Circle**

Chart Block Lot Number: **447 A001 & A002**

Proposed Use: **Mixed Use Development**
Previous Use: **Industrial**
Existing Sanitary Flows: **0** GPD
Existing Process Flows: **0** GPD
Description and location of City sewer that is to receive the proposed building sewer lateral.

Proposed on-site sewer main

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

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

2. Please, Submit Contact Information.

City Planner's Name: **TBD** Phone: _____
Owner/Developer Name: **Initiative for Digital Engineering and Life Sciences, c/o Sam Reiche**
Owner/Developer Address: **100 Commercial Street, Suite 400, Portland, ME 04101**
Phone: **(207) 939-6308** Fax: **N/A** E-mail: **sam.reiche@ideals.org**
Engineering Consultant Name: **Woodard & Curran**
Engineering Consultant Address: **12 Mountfort Street, Portland, ME 04101**
Phone: **(207) 558-3841** Fax: **N/A** E-mail: **alebel@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: **33,400 GPD**
Peaking Factor/ Peak Times: _____
Specify the source of design guidelines: *(i.e.* "*Handbook of Subsurface Wastewater Disposal in Maine,*" "*Plumbers and Pipe Fitters Calculation Manual,*" *Portland Water District Records, Other (specify)*
ASPE Plumbing Engineering Design Handbook, Volume 2, Table 8-7: Typical Wastewater flows from Commercial Sources Waste Water
State of Maine 10-144 CMR 241 Table 4C: Design Flows for Other Facilities

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

4. Please, Submit External Grease Interceptor Calculations.

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

Complete grease trap needs are TBD and are anticipated to be located within building restaurant spaces. As final design layout progresses, more information can be provided.

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 **N/A**

Estimated Industrial Process Wastewater Flows Generated: _____ GPD
Do you currently hold Federal or State discharge permits? Yes ____ No ____
Is the process wastewater termed categorical under CFR 40? Yes ____ No ____
OSHA Standard Industrial Code (SIC): *(http://www.osha.gov/oshstats/sicser.html)*
Peaking Factor/Peak Process Times: _____

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

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

8. SITE DESIGN STANDARDS (14.6.4)

Compliance with the City of Portland's Land Use Code Section 14.6.4 Site Design Standards is described in the following sections.

8.1 Massing, ventilation, and wind impact

The allowable building heights on the campus are informed by the historic location and prominence of the Bean Building, the desire to create substantial public open space while meeting all programmatic goals for the Roux Institute at Northeastern University, resilient building design, and potential shadow and other impacts to neighboring properties. As discussed in Section 3.3, the proposed buildings meet the massing and height requirements specified in the IOZ Regulatory Framework.

8.2 Shadows

As described in Section 3.3, heights and massing of buildings have been designed to minimize shadow impacts to neighbors and avoid negative impacts to existing public open spaces. Shadow study drawings have been provided for reference.

8.3 Snow and ice loading

Buildings have been designed to prevent snow and ice from accumulating and falling onto abutting properties and publicly accessible areas and pathways.

8.4 View corridors

The project is not located in the limits of the *Downtown Vision View Corridor Protection Plan*; therefore, this standard does not apply.

8.5 Historic Resources

A more extensive description of Site history and the preservation of the Bean Building may be found in the Landmark Designation Report for the Burnham & Morrill Company Cannery by Heritage Consulting and Essex Preservation Consulting, dated June 2022.

Due to the designation of the Bean Building as a Historic Landmark, exterior renovation of the building requires review by the Historic Preservation Board. We will work with the Planning Department on the required historic preservation review concurrent with the Site Plan process. Bruner/Cott Architects, a historic preservation architecture firm, is leading the design of the Bean Building restoration in coordination with the Historic Preservation Board. Narratives regarding the restoration and rehabilitation of this historic resource are attached to this Section.

8.6 Exterior Lighting

Proposed exterior lighting is shown on the drawings. A lighting schedule, cut sheets, and photometric plan are provided as referenced in Section 3.

8.7 Noise and Vibration

Refer to Section 3.3.7

8.8 Signage and Wayfinding

Sign permit applications will be submitted under separate cover. The size, scale, proportions, design, materials, placement, quantity and source and intensity of illumination shall be designed to complement and enhance the architectural attributes of the proposed buildings. The primary vehicular and pedestrian entrance is from Sherwood Street. Consideration has been put into wayfinding to facilitate bike, pedestrian, and mass transit.

The campus signage creates a strong sense of arrival and welcome while reinforcing the identity of the Roux Institute at Northeastern University, in the context of the campus landscape, and to provide clear and concise vehicular wayfinding to the buildings' drop-off areas and service entrances, parking, and the childcare center, with flexibility for additional/modified messaging for future development. The sign program also provides for pedestrian orientation and wayfinding at key locations and decision points, along with directional signs to manage bike and walking circulation along paths and trails.

The design intent is for the sign structures to reflect and reinforce the campus's sense of place and identity through their forms, materials, colors, and finishes, utilizing aluminum construction with durable painted and natural finishes, installed with reinforced concrete footings. Granite is utilized as a base element in the gateway, and internal and external illumination is provided as needed for key wayfinding elements such as the vehicular directional sign, gateway, parking wayfinding, and pedestrian orientation kiosks. In this way, the materials of the signs are consistent with the site and building materials.

8.9 Heat and Glare

Refer to Section 3.3.3

8.10 Section Attachments

- Historic Preservation of the Bean Building

Roux Institute Bean Building Restoration and Rehabilitation
Bruner/Cott Architects
11/13/2023

Project Site

The "Bean Building" occupies the site of the former Burnham & Morrill Baked Bean production factory and cannery at 1 Beanpot Circle, Portland Maine. The cannery is located on a peninsula bounded to the west and north by I-295 and to the east and south by the waters of the Casco Bay. The site abuts the Berlin Subdivision of the Grand Trunk Railroad, now owned by the State of Maine, to the northeast. The site originally incorporated a railroad spur that allowed the cannery to receive dried beans from Canada.

The existing Project Site includes the concrete and brick masonry cannery (the "Bean Building"), an asphalt parking lot, and a pier in Casco Bay supporting the "Codfish Building." The Bean Building has four stories containing approximately 51,000 square feet of occupiable space. The west elevation that faces I-295 is especially visible from the highway bridge and B&M company signage and Christmas lighting have made it an informal landmark to people leaving and entering Portland from the north.

Architecture and Historic Designation

The main building of the B&M Baked Bean factory complex, designed by Burnham & Higgins in 1913, is an early example of the "daylight factory" building typology. Daylight factories were a particular architectural style in the early twentieth century consisting of a concrete structural framework and large windows that allowed for air and natural light above brick spandrel panels. This style of building suited the operation of production lines better than previous mill construction, because its reinforced concrete frame allowed for large interior spaces, could carry extreme live loads, and freed the perimeter walls to be filled with glass to allow natural light to penetrate deep into the production spaces. The internal concrete structure consisted of an innovative four-way reinforcement system, with rebar placed orthogonally to the typical column grid as well as at two diagonal directions rotated at 45 degrees from the grid.

The rectangular Bean Building is characterized by its concrete frame exposed on the exterior. The façade is composed of large windows and brick spandrel panels and substantial concrete sills within the structural framework. The base and cornice are decorated with minor projections of cut brick patterns on concrete surfaces. A 2-story portion of the building at the north façade, which originally held offices for the production facility, is topped by a large skylight. In addition to its 2-story/4-story volume, the building is notable for its horizontal concrete banding at each floor level, with the beams expressed as they run continuously around the building's perimeter. At the cornice, there is brick parapet infill above the roof and decorative brick detailing at the tops of the concrete columns. Dimensionally, the column bay spacing in the building is typically 18'-0", but there are three bays at either end of the 4-story volume with 12'-0" spacing on the exterior even though the interior column spacing remains at 18'-0."

The Bean Building has received certification for historic preservation by the city of Portland, Maine.

Work to date with Historic Planning Board

Bruner/Cott Architects and IDEALS met on site with Evan Schueckler and Robert Wiener from the City of Portland on September 7 to initiate and establish an on-going working relationship with the City of Portland. The purpose of the meeting was to introduce the Roux campus project to the City of Portland Historic Preservation Staff via a site walk around all sides of the Bean Building and a subsequent PowerPoint presentation and discussion of design strategies for the Bean Building.

Historic Preservation staff agreed with BCA's overall approach of replicating the historic window sizes and muntin patterns where the current window, sill, and brick infill pattern exist. They also agreed with BCA's overall approach of locating decidedly new interventions where there is no longer built fabric. BCA and IDEALS will review comments from City of Portland staff and present updated designs at a future workshop with the board.

Planned Project

The former industrial site will be repurposed as a high-tech hub for learning, research, and collaboration as part of the Roux Institute of Northeastern University. The "Bean Building" of the original B&M site will be saved and renovated into an innovation space for the development of new businesses and technologies. A new 230,000 sf academic building, designed by Cambridge Seven Associates, will be situated at the northeast corner of the site. Its west façade will face the Bean Building across a tree-lined pedestrian promenade and shared plaza. The existing pier and Codfish Building will be demolished and replaced by a new pier, raised above the historic flood level, on the existing footprint.

Proposed Exterior Scope of Work

The exterior rehabilitation of the Bean Building is planned to include the following scope:

- Replace existing roofing
- Install new rooftop mechanical units and screen enclosure
- Repair existing exterior brick
- Repair and repaint existing exterior concrete frame
- Replace all windows and doors with new energy-efficient windows and doors with profiles to closely match the original 1913 design.
- Install new floor-to-header glazing in areas of the framework where the original construction has been lost
- Install new doors and glazing at the plaza on the south façade facing the new pier
- Remove the concrete steps at the west façade doorway to correspond to new site circulation
- Existing west façade entry door to be replaced with profiles to match existing
- New entry doors installed on east façade and north facade

Later industrial additions to the Bean Building have been demolished. The original concrete and brick exterior will be restored where it remains intact. Areas of reconstruction and construction of a new design will take place in damaged areas depending upon the significance of their placement and the extent of past alteration. Their design will help tell the story of the building's unique history.

Roof

The existing roof will be recovered with new weather-resistant roofing. A rooftop mechanical screen will be installed at the 4-story portion of the building to house the new mechanical units. The existing seasonal tree lighting display will be rebuilt with a permanent installation. The 2-story building roof has a later addition wooden structure above the original structural slab. This will be demolished back to the original concrete structure. New roofing will be installed, and the existing skylight will be restored or rebuilt to match its historic design that incorporated vertical windows.

Exterior Walls

The existing exterior concrete and brickwork has been surveyed and is found to be significantly damaged, especially on the east façade. The west façade facing Tukey's Bridge is largely intact, with the north and south facades in varying condition. Restoration work will focus on the north, east, and south facades; the east façade will receive the most consideration for rebuilding severely damaged areas to receive glazing assemblies that do not replicate the original, lost fenestration. Generally, where the original sills and spandrels survive, they will be repaired.

Windows and Doors

All existing windows and doors will be replaced by new energy efficient glazing in compliance with Portland's new energy code (IEEC 2021). Where appropriately preserved openings exist, the existing windows will be replaced with new windows to match the historic pane sizes and profiles of mullions and sash elements. Where openings have been inappropriately modified or damaged over time, new floor to header modern glazing may be installed.

West façade entry

The existing west façade entry will be repaired or replaced and deemphasized as a primary entryway.

New East façade entry

A new entry will be constructed on the east façade facing the proposed Academic Building.

South façade Pier Plaza

New doors and glazing will be installed at the lower level of the south façade to face the proposed public plaza and the new pier.

Pier & Interpretive Work

The existing Codfish Building and pier have been surveyed and found to be in unsalvageable condition as determined by the PHPB and City Council when the Bean Building received its landmark designation. They are to be demolished and replaced by a new raised pier on the footprint of the original. IDEALS, Northeastern, and the design team will work with PHPB to develop an interpretive approach for historic content connected to the new pier.

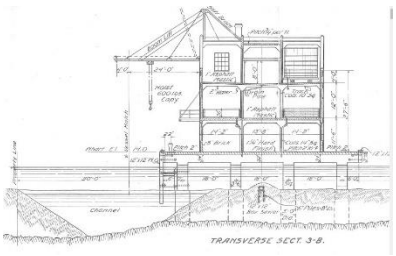
The overarching theme of the Burnham & Morrill complex interpretive installations will be the innovative development of factory-based food preservation, packaging, and mass distribution that originated in Portland and brought about an advanced architecture, called the Daylight Factory in 1913 for the main cannery building and the smaller building for handling seafood on the associated pier. The interpretive elements will include salvaged artifacts to highlight the connection between freight rail and sea-going vessels at the site in the landscape, and an explanation of what historically occupied the area of the new pier. These will occupy several different locations in the vicinity of the Bean Building, the plaza at the south end of the building, and on the pier itself.

The following elements relate specifically to interpretation of the original Codfish Pier:

- An orientation marker showing the appearance of the original pier and its building can terminate the promenade when it reaches the pier.
- Visitors to the new pier will see light posts placed to indicate the location of the original Codfish building.
- Artifacts associated with the pier's connection to sea-going vessels mark the transition from land to water.
- Metal strips enumerating the codfish operation follow column lines of the original structure.

As design develops further, PHPB will be able to see detailed proposals for integrating historic artifacts and explanatory materials into specific locations.









Historic photo circa 1920s



Historic photo circa 1940s



Existing conditions- west façade



Existing conditions- south façade



Existing conditions- east façade



Existing conditions- north façade



Existing conditions- north facade



Existing pier and Codfish Building

9. COMPREHENSIVE PLAN

The proposed development is consistent with the City's Comprehensive Plan and the goals of the Institutional Overlay Zone unanimously approved by the Portland City Council in February 2023. The proposed campus includes adaptive re-use of the B&M Bean Building, facilitates public interaction with the waterfront, creates a new walkable core of diverse settings, and bolsters economic opportunity in East Deering, the City of Portland, and beyond.

9.1 Consistency with Portland's Plan 2030

Portland's Plan 2030 focuses primarily on eight aspects of Portland's identity and performance: environment, waterfront, transportation, housing, recreation and open spaces, facilities, historic resources, and economy (see **Figure 9-1**). This first phase of the campus development advances several goals outlined in *Portland's Plan 2030*, as summarized by the following excerpts from the plan.

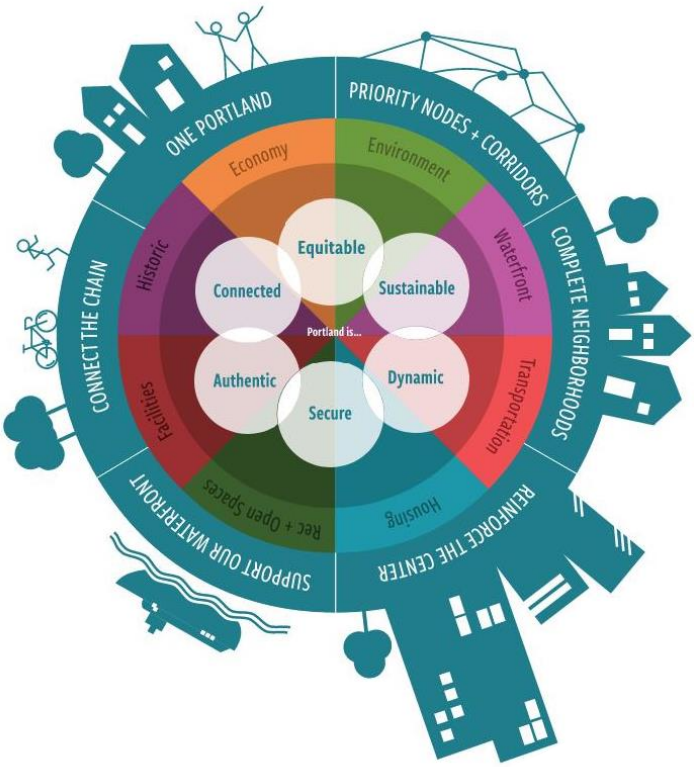


Figure 9-1: Structure of *Portland's Plan 2030*

Environment

"Adopt sustainable land use and transportation policies that support connectivity, walkable neighborhoods, and multi-modal transportation."

"Plan for the mitigation and redevelopment of brownfields to support productive uses and a healthier environment for residents."

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."

Recreation & Open Space

"Encourage physical and visual access to Portland's waterfront – Casco Bay, Back Cove, and the Stroudwater, Presumpscot, and Fore Rivers – as a "blueway" network and an extension of public space for local and regional recreation and transportation needs."

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."

Economy

"Support job creation and business growth through public initiatives and private, institutional, and regional partnerships."

"Develop programs that support industries with high-growth / high-value potential such as life sciences, food production, information technology, and marine-related industries."

"Modify ordinances and make strategic investments to better promote business development and job creation in priority areas."

"Ensure that the growth of Portland's educational, medical, and cultural institutions is integrated into Portland's urban fabric through the use of high-quality design, management of impacts, community partnerships, and innovative planning."

9.2 Consistency with One Climate Future

In 2020, the Cities of Portland and South Portland both adopted a collaborative sustainability and resilience plan: One Climate Future. The plan addresses many challenges, priorities, and strategies for responsible climate stewardship and mitigation of climate-related public health threats. It includes great specificity and is summarized by six general action items. The following are One Climate Future's "six big moves" and discussion of their relevance to Northeastern University's Portland Campus.

1. Build better buildings.

A new campus of higher education, research, and development deserves thoughtful design; it represents an opportunity to implement best practices for energy efficiency, healthy communities, human comfort, and interaction with the surrounding environment. As described in Section 3.3.7 the new buildings on campus will be created with sustainability and resilience top-of-mind. A sustainability charter has been

developed to guide this first phase of work and future campus development. A copy of the sustainability charter is uploaded under separate cover to the Documents folder.

2. Connect people to places, to opportunity.

Northeastern University provides opportunity through graduate education, research, and collaboration. The campus also provides new public open space and connections to the waterfront. As described in Section 5, Northeastern University supports public transportation networks so that the campus is accessible to all.

3. Power everything* with clean renewable electricity.

Electrification allows for appliances, buildings, and systems to support the shift to renewable energy in our power grid, without cementing a need for fossil fuels moving forward. Northeastern University's commitment to sustainability is further described in the charter uploaded under separate cover to the Documents folder.

4. Grow a circular economy.

Fostering technology knowledge and life-science research in Portland will diversify its economy and help prepare for the future. Northeastern University will strengthen the region through education, research, and collaboration with corporate and community partners; fueling progress through innovation.

5. Nourish ecosystems, which nourish us.

The redevelopment will soften landscapes to reduce impervious areas on-site. In addition, stormwater management systems and low-impact-development methodologies will be implemented as part of this first phase of work, resulting in improved water quality discharging into Casco Bay.

6. Build collaborative capacity to create this future.

The Northeastern University will develop technology and life science talent and position Mainers, new Mainers, and international students for financially stable and personally rewarding careers. The campus will connect budding talent with existing corporate and community partners, and thus create opportunity for fresh thinking and an innovative future.

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Construction Management Plan (CMP) for The Roux Institute at Northeastern University
Developed by: Consigli Construction Company
Developed: May 10, 2023 Updated: September 14, 2023

A. Construction Management Principles

All aspects of this Construction Management Plan are designed and intended to mitigate or minimize construction related impacts to public ways (The Streets of Sherwood and Veranda), surrounding neighborhood(s), and ongoing operations of the Maine Yacht Center and other abutters. Consigli Construction will work collaboratively with IDEALS, project consultants, subcontractors, and The City of Portland to ensure the most efficient and least disruptive construction project possible. This goal will be attained through detailed and consistent planning, coordination, execution and seamless communication with all parties and stakeholders.

B. Development and Review of Construction Management Plan

Consigli Construction will refine and update the Construction Management Plan throughout the course of the project as conditions change and to optimize the logistical and safety related measures being employed in the interest of public safety. The overriding goal is to eliminate or minimize adverse impacts to the construction site, surrounding areas and public ways by protecting the public, residents, construction personnel and property, while simultaneously ensuring pedestrian, Northeastern University, Maine Yacht Center, and other abutter activities can continue unabated and in a safe manner. Please refer to the attached Site Logistics Plans.

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

Prior to scheduling a preconstruction meeting and the issuance of city required permits, IDEALS and Consigli Construction shall meet all general requirements and enforcement of Portland's Land Use Code.

Other permits, as applicable include:

Street Opening & Street Occupancy Permit: Construction activity in a public right-of-way (Sherwood Street) is controlled by Portland's 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. Though still under design, the majority of new to existing utility connections to the project are anticipated to be on Sherwood Street. Temporary lane closures are anticipated during utility tie-in work. All temporary directional

signage and traffic control to be utilized during this work. It is also anticipated that sidewalk occupancy will be required for construction purposes on Sherwood Street. All required signage to be provided. The public bus stop located on Veranda Street is anticipated to be maintained through construction.

Blasting: Blasting is not required nor anticipated for this project. Mechanical means of removal of rock is anticipated in lieu of blasting.

Building Code: The project will employ the best practices, as applicable, of Chapter 33 Safeguards During Construction, from the International Building Code.

D. Construction Administration and Communication

IDEALS and Consigli Construction will implement a continuous communication strategy and program through preconstruction and the construction phases of the project, that will include neighborhood forums. 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. IDEALS and Consigli Construction will work closely with the University, adjacent abutters, businesses, and will keep all parties regularly informed, as far in advance as possible, of scheduled work, particularly work anticipated to cause significant noise, vibrations, or dust. Consigli Construction will also prominently display appropriate signage indicating construction entrances and exits, pedestrian access around the site, and signage directing visitors to the construction field office. Site signage also includes Consigli Construction's 24 hours/day contact information. All temporary signage will be modified appropriately as conditions may change and will be removed at the conclusion of the project.

E. Construction Schedule

Construction is anticipated to commence in the summer of 2024 and be substantially complete by the summer of 2027 allowing student occupancy of the education building for the fall semester 2027. A detailed construction schedule is attached.

Work hours to follow City of Portland Sections 17-18, Construction Activities for Building Permit, and Section 25-129, Noise, dust, and debris. Work hours will generally be restricted to 7:00am – 7:00pm, Monday through Friday. In the event of Saturday or Sunday work, hours to be limited to 8:00am – 4:00pm. Any further off-hour work will be coordinated directly with the City.

Material deliveries will comply with normal work hours. This project is considering utilizing "just in time" delivery techniques with the intent that materials delivered to the site are promptly installed/put in place. Temporary storage locations will be off site.

F. Security & Public Safety

As depicted in the Site Logistics Plan, the entire project site will be enclosed by chain link construction fencing. Primary construction site accesses to be swinging gate entrances at the end of Sherwood Street with an emergency exit into the Maine Yacht Center. Gates will be secured during non-working hours and equipped with "Knox" boxes as required by the city.

Project work activities will be conducted in accordance with Consigli Construction and OSHA regulations and will further comply with all City of Portland and/or State of Maine safety related regulations. A comprehensive Fire Safety/Fire Dept Access and Fire Safety Plan (NFPA 241) will be developed in conjunction with a 3rd party consultant (Code Red), reviewed with the City of Portland prior to implementation as well as a project incident response process to be followed in the event of emergencies.

G. Construction Permitting and Traffic Control Plans

Construction Activity in Public Streets: To minimize impacts, disruption, and provide safe and efficient passage, Consigli Construction will implement best practices traffic control in compliance with all City of Portland requirements during the duration of the project. This includes signage, measures to mitigate idling construction related delivery traffic, construction service vehicles, traffic flaggers, temporary traffic flow modifications, signage & barriers at temporary partial street closings, and any other measures required to control work taking place in public ways. In instances where utility connection excavations may need to be left open overnight, measures including barriers, traffic/pedestrian signage, and other mandated requirements will be implemented.

Sewer and Stormwater: Sewer and stormwater water system connections (in addition to water and electrical connection) will be required. Most tie-in connections to existing services are anticipated to occur on Sherwood Street.

Traffic Control Plans: Construction activities that impact the existing public street system will be controlled to protect the safety of the construction workers, pedestrians, and the travelling public. In addition to utility connections, temporary lane closures of Sherwood Street are anticipated during the period of construction of street and utility improvements. Traffic control measures are described above and will be further articulated and elaborated upon for specific relevant activities and as part of street opening or street occupancy/sidewalk occupancy permitting.

H. Site Management and Controls

Consigli Construction will implement and manage a continuous program of containing soils onsite, public street cleaning and onsite dust control. Program to comply with City of Portland requirements and will include a tire wash at the construction exit, water trucks and water cannons (during demolition) to control dust, street sweeping equipment and other measures as required.

Trash dumpsters will be utilized onsite for regular removal of all construction related trash & debris. The site and building areas under construction will be kept orderly and as clean as possible throughout the construction period.

Noise and vibration will be maintained at minimal levels and measured.

Snow plowing and surface treatment of the project site within the limits of construction will be the responsibility of Consigli Construction.

I. Erosion Control and Preservation of Trees

Prior to commencement of construction activities, erosion and sedimentation controls as contained in the approved erosion and sedimentation control plan shall be installed. These controls are currently in place and shall be inspected regularly and maintained on a consistent basis.

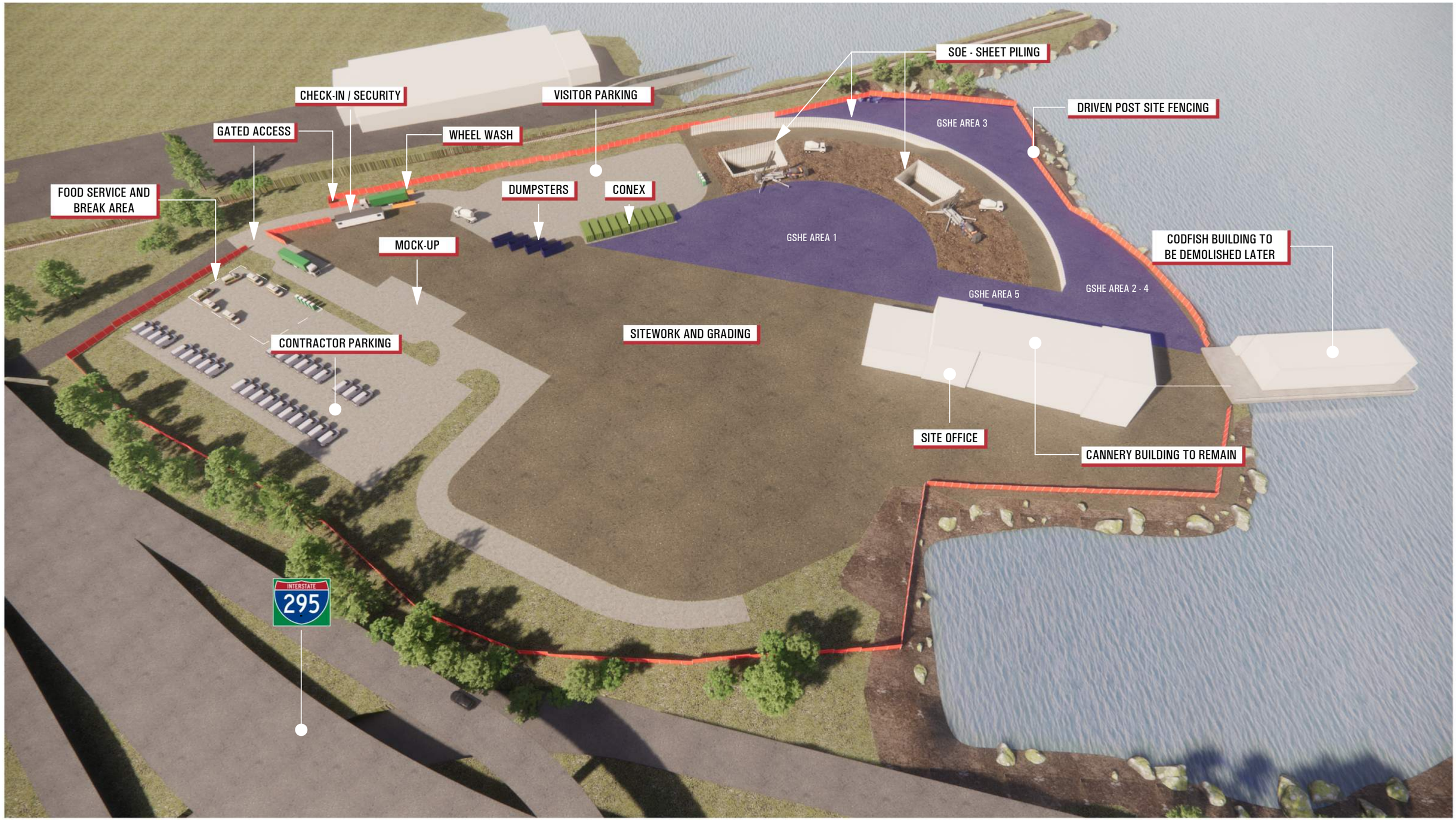
All tree and other landscaping preservations measures shall be as depicted in the landscaping design documents. Any onsite material storage will be away from any existing to remain landscaping plantings.

J. Construction Staging Area

Refer to Site Logistics Plan for anticipated locations of temporary site office and storage trailers and material staging and storage areas. Dumpster locations to be dependent on optimal locations based on activities. Truck wheel washing stations to be located at entry/exit points to the site.

Deliveries: Material deliveries will be carefully planned to not encumber the site or adjacent public way with material delivery vehicles. All efforts will be made to avoid queueing of delivery vehicles on public ways. In the instance of consistent deliveries of large quantities construction product, offsite remote marshalling area will be utilized for trucking. Truck deliveries will enter the site at the Sherwood Street construction gate.

SITEWORK / FOUNDATION



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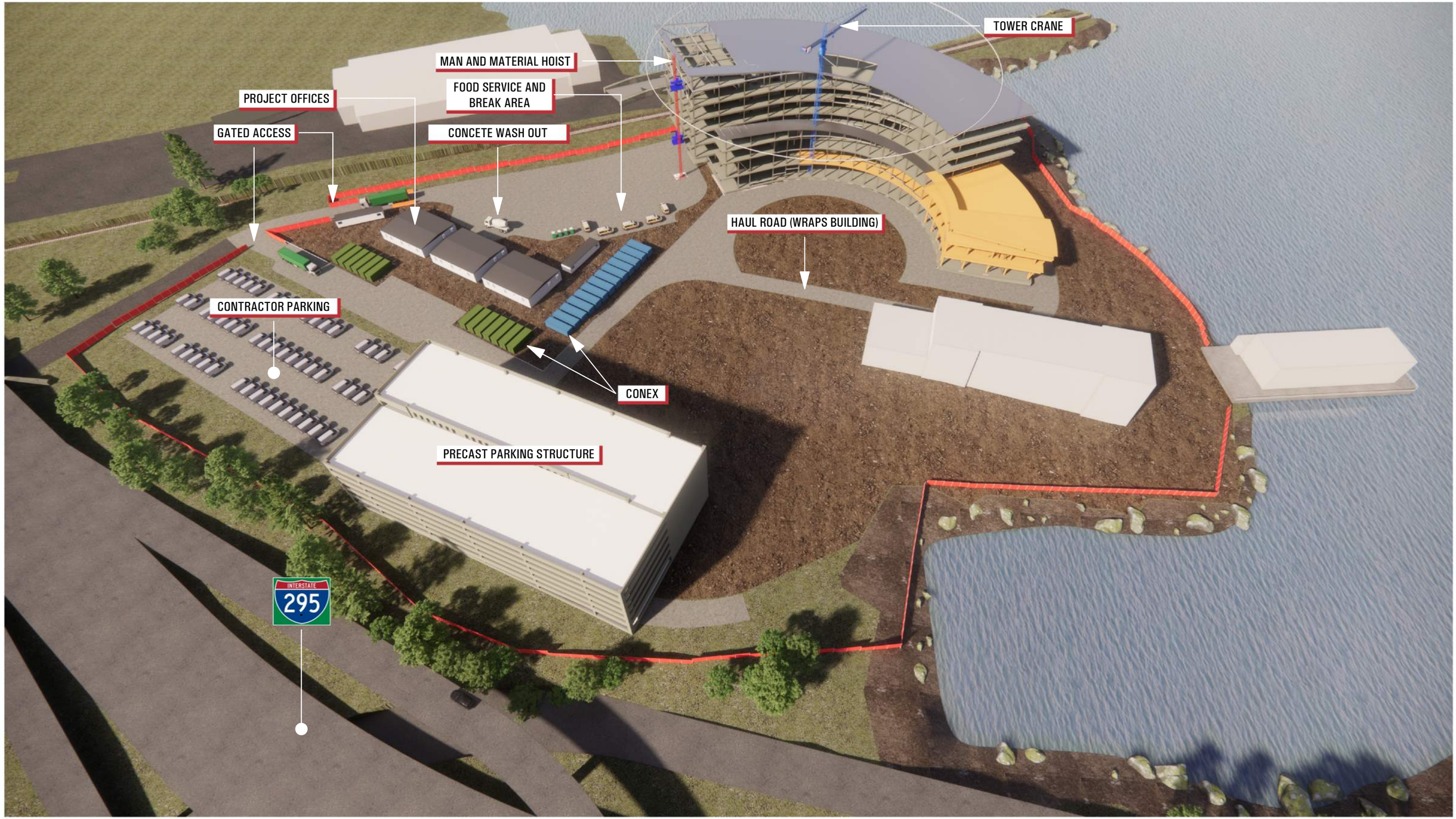

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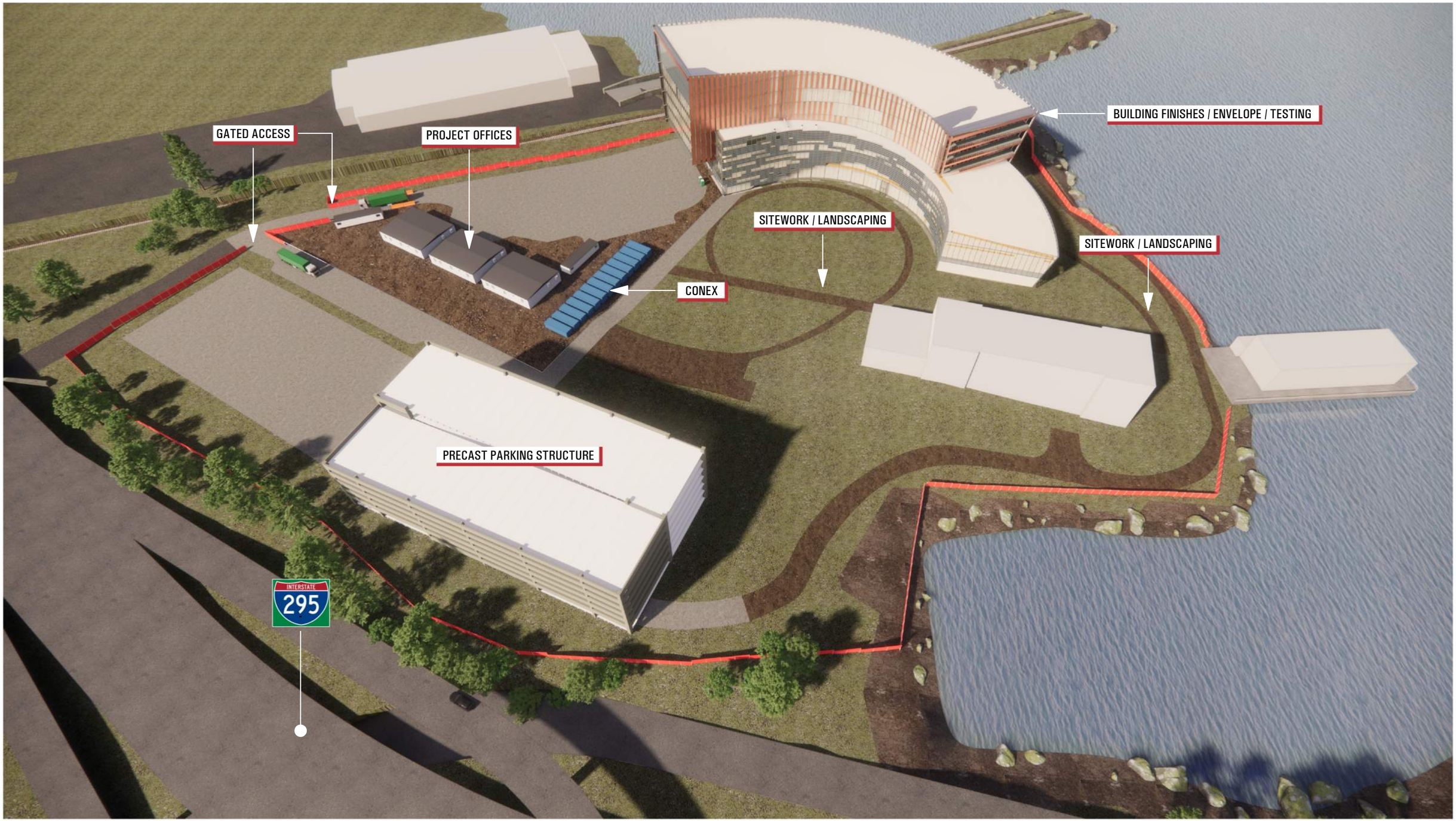

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Construction Management Plan (CMP) for The Roux Institute at Northeastern University
Developed by: Consigli Construction Company
Developed: May 10, 2023 Updated: January 25, 2024

A. Construction Management Principles

All aspects of this Construction Management Plan are designed and intended to mitigate or minimize construction related impacts to public ways (The Streets of Sherwood and Veranda), surrounding neighborhood(s), and ongoing operations of the Maine Yacht Center and other abutters. Consigli Construction will work collaboratively with IDEALS, project consultants, subcontractors, and The City of Portland to ensure the most efficient and least disruptive construction project possible. This goal will be attained through detailed and consistent planning, coordination, execution and seamless communication with all parties and stakeholders.

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Temporary lane closures are anticipated during utility tie-in work. All temporary directional

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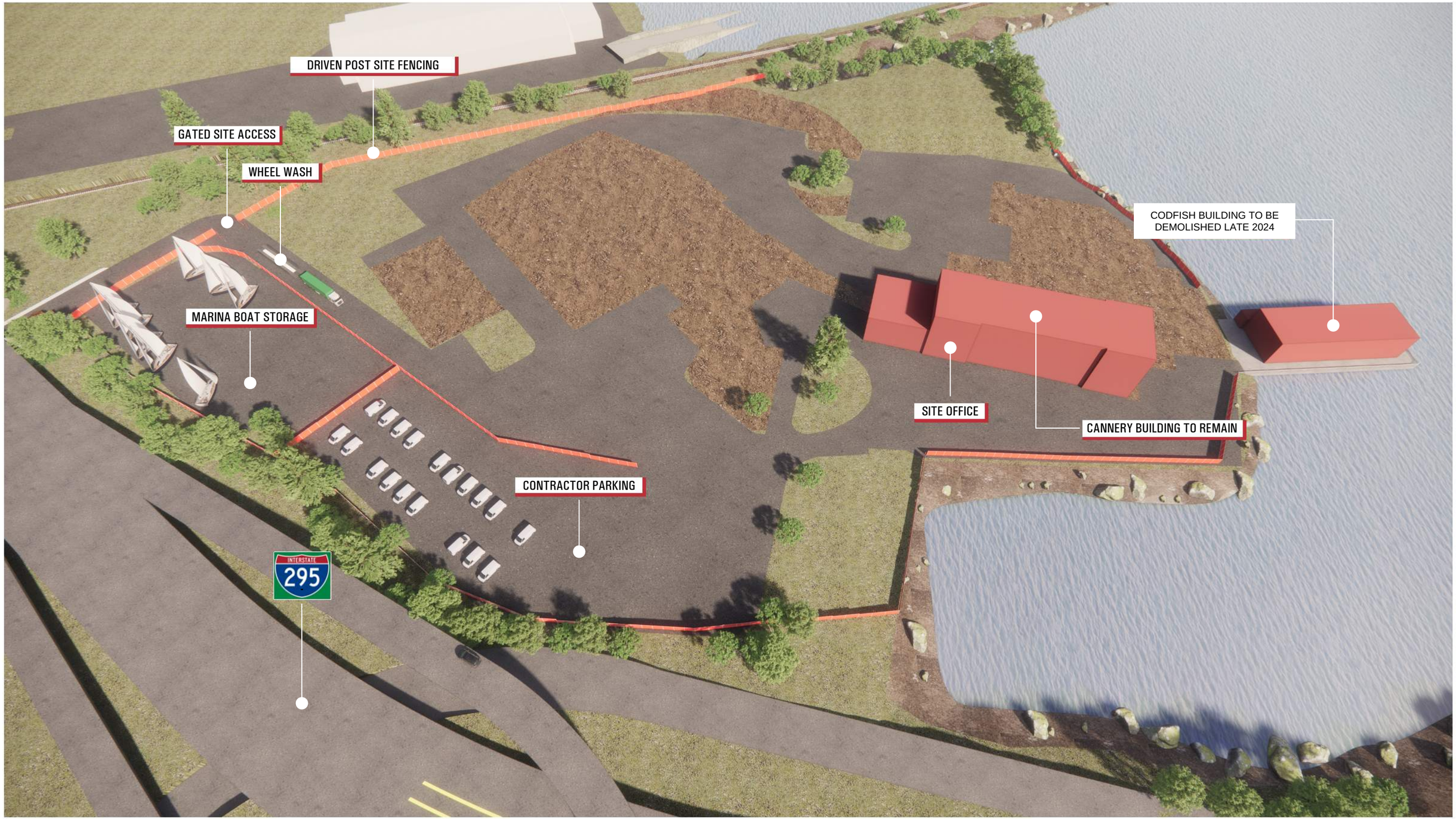
POST-DEMO



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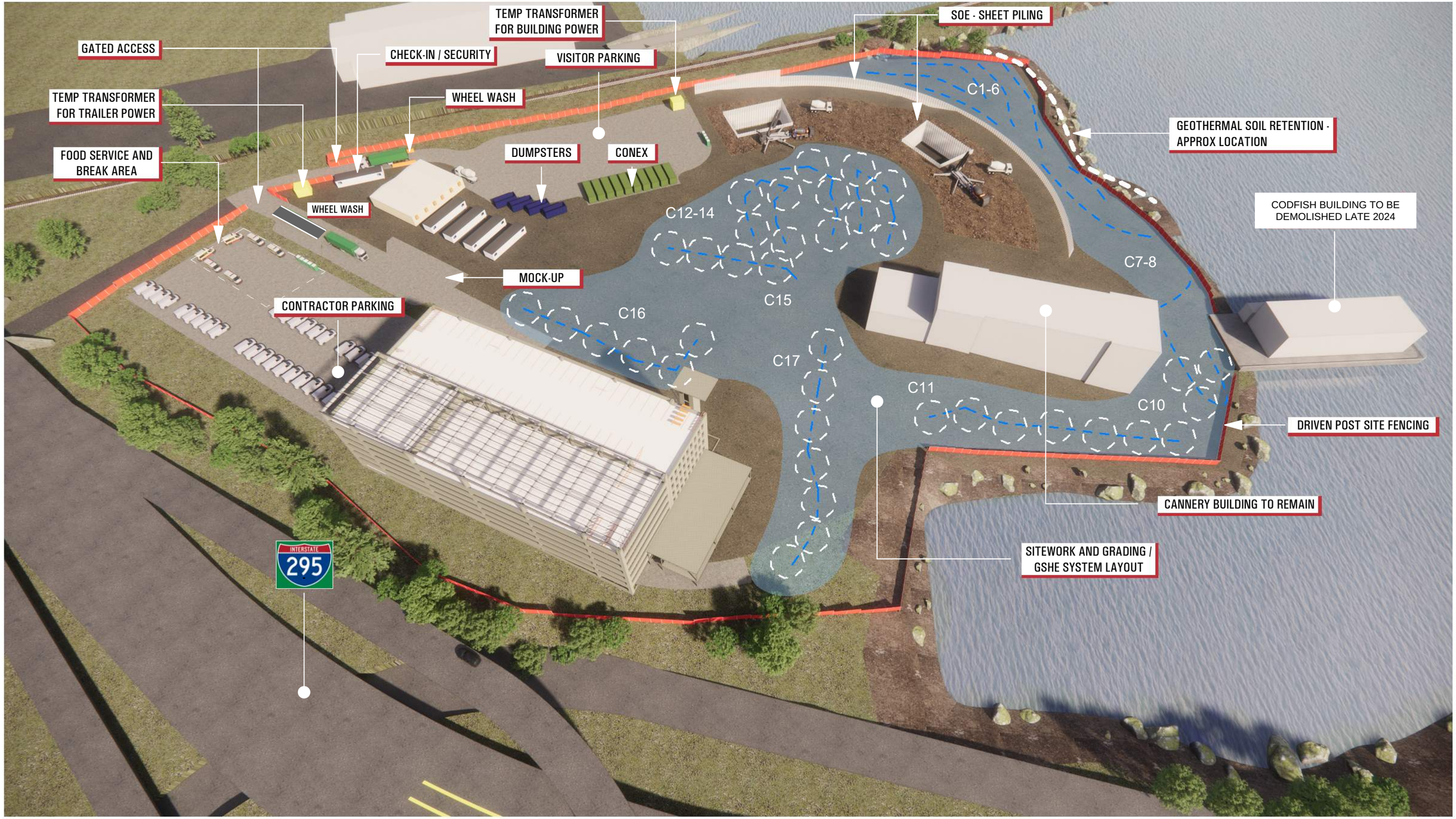

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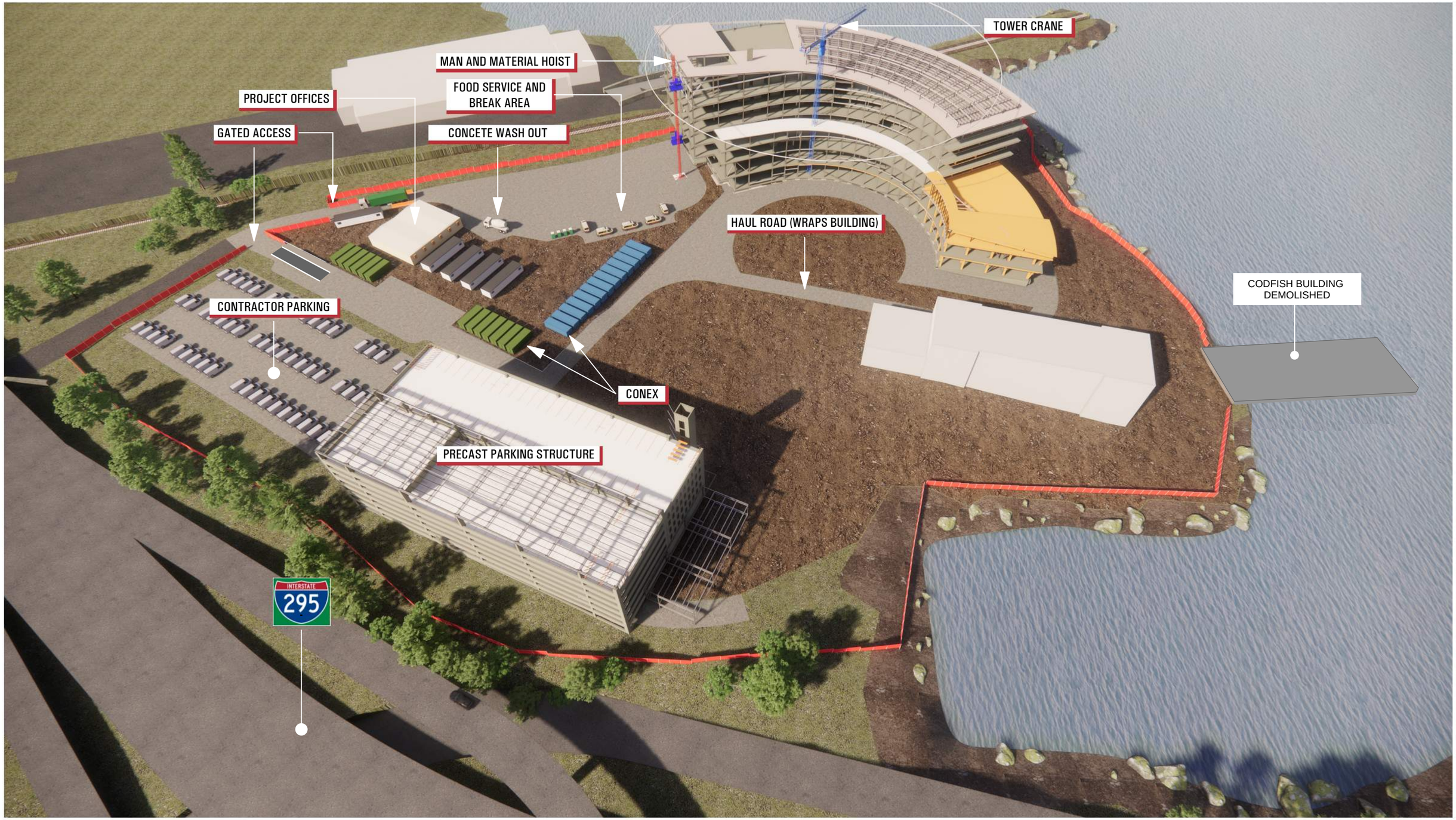

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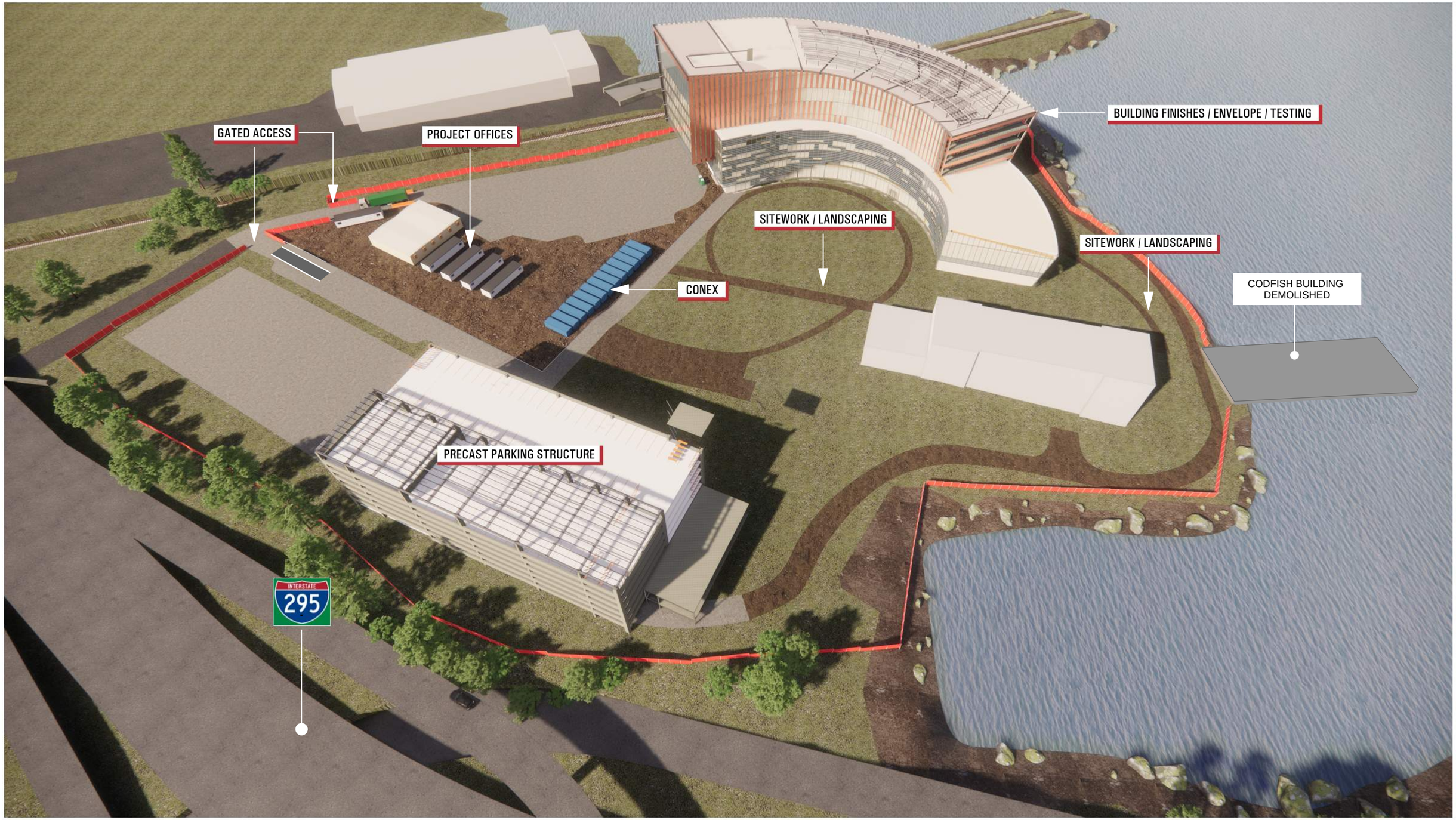


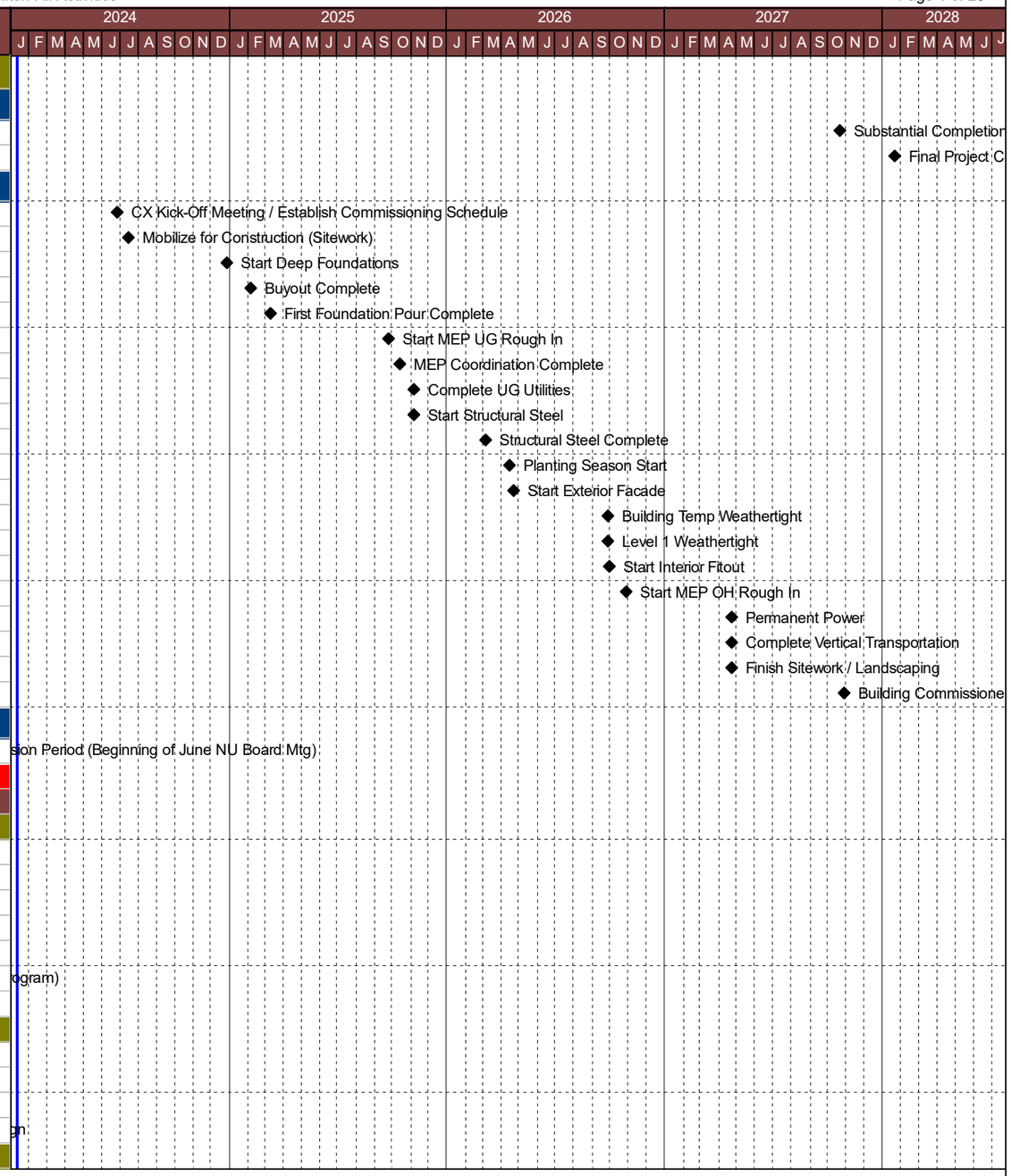
TRUCKING DELIVERY ROUTE (7AM - 5PM)



TRUCKING DELIVERY ROUTE (7AM - 5PM)



Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
IDEALS - Roux Institute at Northeastern					
Contract Milestones					
A7910	Substantial Completion	0	0		22-Oct-27*
A8170	Final Project Completion	0	0		21-Jan-28
Project Milestones					
A8220	CX Kick-Off Meeting / Establish Commissioning Schedule	0	0	26-Jun-24	
A7900	Mobilize for Construction (Sitework)	0	0		16-Jul-24
A8310	Start Deep Foundations	0	0	27-Dec-24	
A8240	Buyout Complete	0	0		05-Feb-25
A7920	First Foundation Pour Complete	0	0		11-Mar-25
A8190	Start MEP UG Rough In	0	0	25-Sep-25	
A8210	MEP Coordination Complete	0	0		14-Oct-25
A8260	Complete UG Utilities	0	0		06-Nov-25
A8200	Start Structural Steel	0	0	07-Nov-25	
A7930	Structural Steel Complete	0	0		06-Mar-26
A7960	Planting Season Start	0	0	15-Apr-26*	
A8230	Start Exterior Facade	0	0	23-Apr-26	
A7940	Building Temp Weathertight	0	0		28-Sep-26
A7950	Level 1 Weathertight	0	0		28-Sep-26
A8270	Start Interior Fitout	0	0	29-Sep-26	
A8250	Start MEP OH Rough In	0	0	28-Oct-26	
A8100	Permanent Power	0	0		22-Apr-27
A8290	Complete Vertical Transportation	0	0		22-Apr-27
A8300	Finish Sitework / Landscaping	0	0		22-Apr-27
A8280	Building Commissioned	0	0		29-Oct-27
Preconstruction					
A00616	Leadership Decision Period (Beginning of June NU Board Mtg)	110	0	10-Jan-23 A	12-Jun-23 A
Design					
Roux Institute & Site					
Space Programming Phase					
A00303	Initiation/Data Gathering	10	0	06-Sep-21 A	17-Sep-21 A
A00304	Benchmarking	10	0	20-Sep-21 A	01-Oct-21 A
A00305	Modular Space Standards	15	0	20-Sep-21 A	08-Oct-21 A
A00306	"Straw" Program	8	0	11-Oct-21 A	20-Oct-21 A
A00314	Preparation of Final Detailed Space Program	57	0	25-Nov-21 A	11-Feb-22 A
A00318	Complete Programming Deliverables (Publish Final Space Program)	0	0	11-Feb-22 A	
A00319	RI/NU Review and Approval	10	0	14-Feb-22 A	28-Feb-22 A
Concept Development					
A00488	Conceptual Design	75	0	28-Feb-22 A	10-Jun-22 A
A00492	Complete Conceptual Design Deliverables	0	0	23-May-22 A	
A00493	Cost Estimating by CM	10	0	23-May-22 A	06-Jun-22 A
A00491	IDEALS Review and Approval of Conceptual Design	10	0	23-May-22 A	06-Jun-22 A
Schematic Design					



Start Date 06-Sep-21
Finish Date 21-Jan-28
Data Date 12-Jan-24
Run Date 17-Jan-24 14:39
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Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

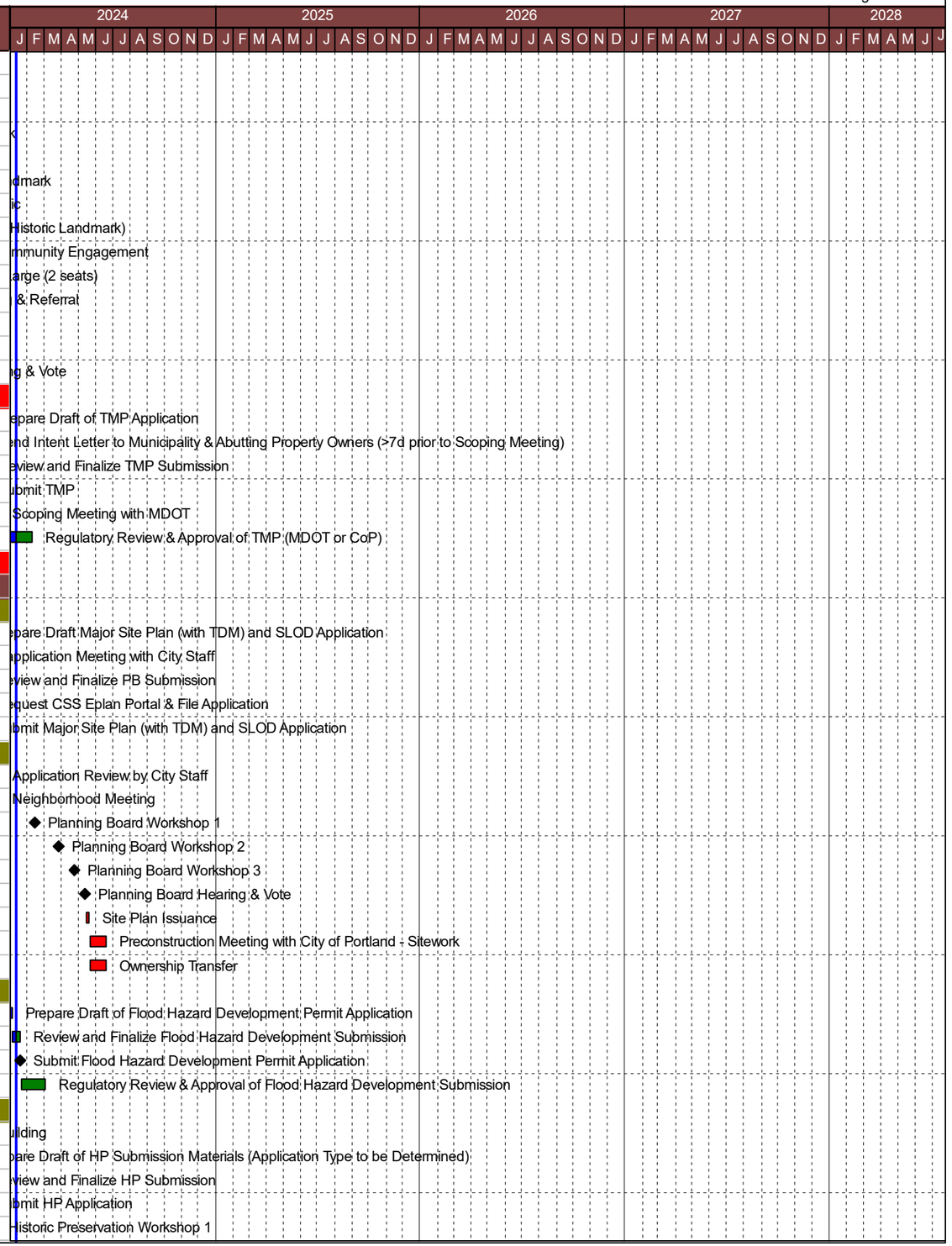
Consigli Construction Co., Inc.
IDEALS - Roux Institute at Northeastern
Project Schedule - Updated 12-Jan-24

CONSIGLI
Est. 1905

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
A00324	Schematic Design	80	0	20-Jun-22 A	07-Oct-22 A
A00337	Cost Estimating by CM	40	0	26-Sep-22 A	18-Nov-22 A
A00338	Review and Adjustments	25	0	21-Nov-22 A	23-Dec-22 A
A00621	Complete Revised Schematic Design (230k GSF)	40	0	23-Jan-23 A	07-Apr-23 A
A00679	Cost Estimating Revised Schematic Design (230k GSF)	20	0	10-Apr-23 A	05-May-23 A
Design Development					
A00340	Design Development	91	0	13-Jun-23 A	20-Oct-23 A
A00371	Subcontractor DD Pricing	5	0	23-Oct-23 A	22-Nov-23 A
A00361	Issue 100% DD Estimating Package (CCC & Fennessy)	30	0	23-Oct-23 A	05-Dec-23 A
A00573	Owner Comments	0	0		03-Nov-23 A
A00563	DD Estimate Check & Approval	0	0		13-Nov-23 A
A00391	Reconciliation - DD Estimate	12	0	06-Dec-23 A	21-Dec-23 A
A00401	VE - DD Estimate	16	3	22-Dec-23 A	17-Jan-24
A00411	DD Design Finalization	5	5	18-Jan-24	24-Jan-24
A00381	DD Estimate Review & Approval	5	5	25-Jan-24	31-Jan-24
Site Plan Deliverables					
A00634	Site Plan Deliverable - Architecture	40	0	10-Apr-23 A	07-Nov-23 A
A00669	Site Plan Deliverable - Landscape	40	0	10-Apr-23 A	07-Nov-23 A
A00670	Site Plan Deliverable - Utilities	40	0	10-Apr-23 A	07-Nov-23 A
Sitework Design Deliverables					
A9230	Design Finalization - Sitework	89	44	23-Oct-23 A	15-Mar-24
Geothermal Design Deliverables					
A2030	Submit Test Well OAL	5	0	30-May-23 A	20-Jun-23 A
A2050	Owner Approve OAL	5	0	21-Jun-23 A	27-Jun-23 A
A2040	Procure Test Well Materials	20	0	28-Jun-23 A	29-Aug-23 A
A1780	Test Well Installation & Testing	46	0	30-Aug-23 A	03-Oct-23 A
A2060	Design Finalization - Geothermal	47	44	04-Oct-23 A	15-Mar-24
Construction Documents					
A00392	50% Constructions Documents / Permit Set	63	63	01-Feb-24	01-May-24
A00382	Construction Documents	105	105	01-Feb-24	01-Jul-24
A00402	Review & Approve 50% CDs / Permit Set	10	10	02-May-24	15-May-24
A00510	IDEALS Review & Approval of Construction Documents	19	19	02-Jul-24	29-Jul-24
Owner Procurement					
A8330	Owner Procure Envelope Commissioning Agent	14	0	13-Jun-23 A	06-Nov-23 A
A8340	Owner Procure MEP Commissioning Agent	14	0	13-Jun-23 A	30-Nov-23 A
Entitlements					
IOZ Change					
Prepare IOZ Application Materials (IDP and Regulatory Framework)					
A00250	Prepare Text Amendment Application to Add Institute Name	60	0	16-Sep-21 A	10-Dec-21 A
A00251	Prepare Text and Map Amendment Application	60	0	16-Sep-21 A	10-Dec-21 A
A00466	Submit Draft IOZ Application to IDEALS	1	0	08-Dec-21 A	13-Dec-21 A
A00418	IDEALS Review of Draft IOZ Submission	38	0	09-Dec-21 A	31-Jan-22 A
A00419	Address Comments from IDEALS and Finalize IOZ Submission	10	0	01-Feb-22 A	14-Feb-22 A
A00420	Request CSS Eplan Portal & File Application	5	0	15-Feb-22 A	21-Feb-22 A
A00469	Submit IOZ Application to City	0	0	21-Feb-22 A	
A00463	Application Review by City Staff	30	0	22-Feb-22 A	04-Apr-22 A
A00512	Submit Revised IOZ Application to City	0	0	02-Aug-22 A	
IOZ Public & Regulatory Meetings, Presentations, and Response to Comments					
A00255	IOZ Neighborhood Meeting 1 (Prior to submission of application)	1	0	18-Nov-21 A	18-Nov-21 A



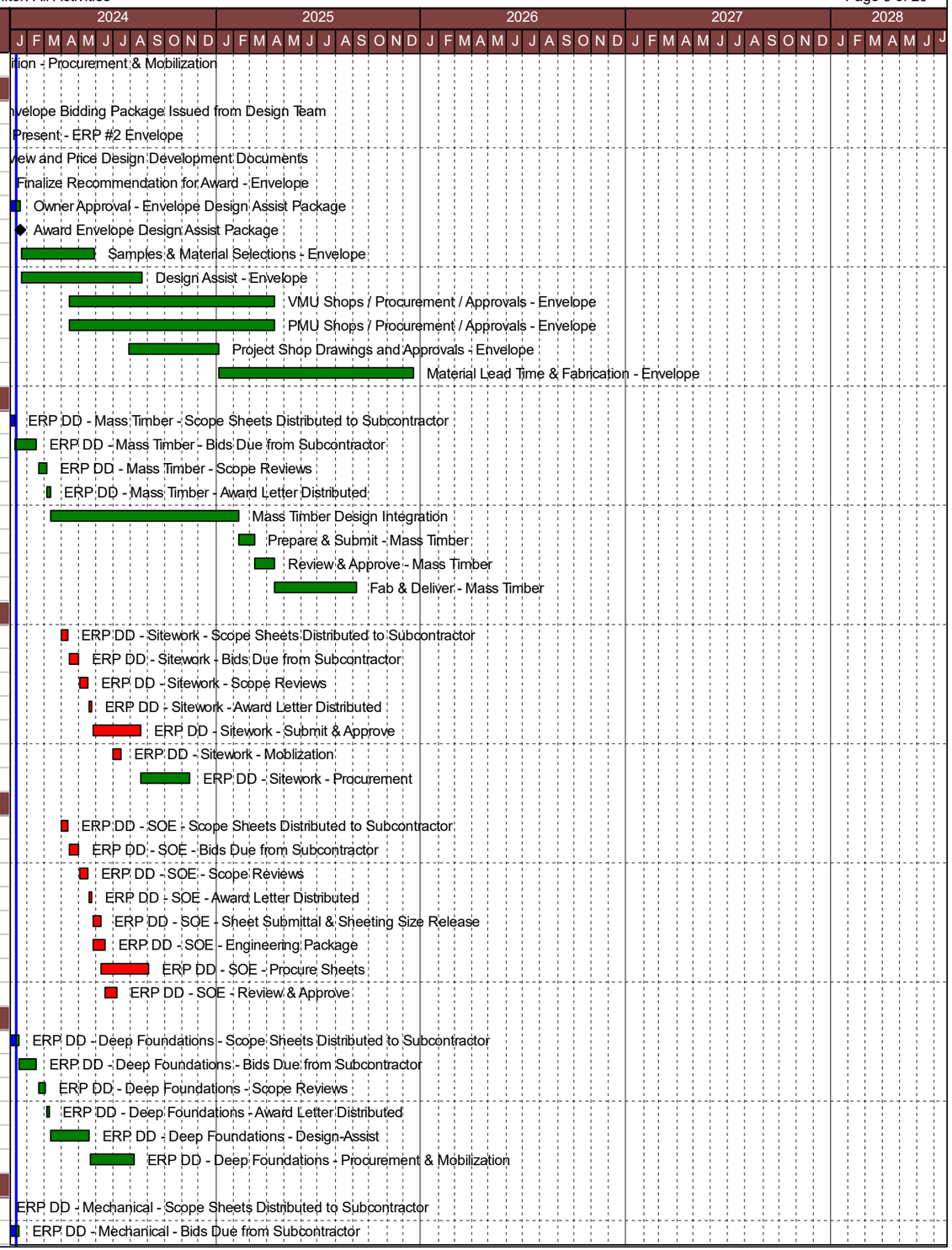
Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
A00254	Scoping/Preapplication Meeting with City Staff	1	0	01-Dec-21 A	03-Dec-21 A
A00256	IOZ Neighborhood Meeting 2 (Post submission)	0	0	04-Apr-22 A	
A00483	Pre Application Meeting with DEP and ACOE	0	0	05-Apr-22 A	
A00422	Historic Preservation Workshop 2 - Landmark	0	0	08-Aug-22 A	
A00424	IOZ Planning Board Workshop 2	0	0	09-Aug-22 A	
A00423	Historic Preservation Public Hearing - Landmark	0	0	07-Sep-22 A	
A00258	IOZ Planning Board Workshop 3 - Traffic	0	0	11-Oct-22 A	
A00519	City Council Approval of Designation (Historic Landmark)	0	0	19-Oct-22 A	
A00259	IOZ Planning Board Workshop 4 - Community Engagement	0	0	25-Oct-22 A	
A00580	November Election - District 3 & At-Large (2 seats)	0	0	08-Nov-22 A	
A00260	IOZ Planning Board Public Hearing & Referral	0	0	22-Nov-22 A	
A00261	City Council Workshop 1	0	0	09-Jan-23 A	
A00262	City Council First Reading	0	0	18-Jan-23 A	
A00502	City Council Second Reading & Vote	0	0	06-Feb-23 A	
Traffic Movement Permit (TMP)					
A00504	Prepare Draft of TMP Application	58	0	21-Apr-23 A	15-Nov-23 A
A00523	Send Intent Letter to Municipality & Abutting Property Owners (>7d prior to Scoping Meeting)	0	0		15-Nov-23 A
A00505	Review and Finalize TMP Submission	10	0	15-Nov-23 A	16-Nov-23 A
A00508	Submit TMP	0	0		17-Nov-23 A
A00522	Scoping Meeting with MDOT	0	0		13-Dec-23 A
A00509	Regulatory Review & Approval of TMP (MDOT or CoP)	39	20	14-Dec-23 A	09-Feb-24
Phase 1 Site Plan - Permits & Approvals					
City of Portland Permitting					
Site Plan - Prepare & Submit (W&C activity)					
A00269	Prepare Draft Major Site Plan (with TDM) and SLOD Application	40	0	21-Apr-23 A	07-Nov-23 A
A00272	Preapplication Meeting with City Staff	0	0		25-Oct-23 A
A00426	Review and Finalize PB Submission	10	0	08-Nov-23 A	13-Nov-23 A
A00427	Request CSS Eplan Portal & File Application	5	0	08-Nov-23 A	13-Nov-23 A
A00474	Submit Major Site Plan (with TDM) and SLOD Application	0	0		13-Nov-23 A
Application Review / PB Workshops / Approval					
A00465	Application Review by City Staff	50	0	14-Nov-23 A	13-Dec-23 A
A00273	Neighborhood Meeting	0	0		13-Dec-23 A
A00274	Planning Board Workshop 1	0	0		13-Feb-24
A00275	Planning Board Workshop 2	0	0		26-Mar-24
A00276	Planning Board Workshop 3	0	0		23-Apr-24
A00277	Planning Board Hearing & Vote	0	0		14-May-24
A00297	Site Plan Issuance	5	5	15-May-24	21-May-24
A00307	Preconstruction Meeting with City of Portland - Sitework	20	20	22-May-24	19-Jun-24
A00317	Ownership Transfer	20	20	22-May-24	19-Jun-24
Flood Hazard Development Permit					
A00279	Prepare Draft of Flood Hazard Development Permit Application	39	0	24-Apr-23 A	04-Jan-24 A
A00431	Review and Finalize Flood Hazard Development Submission	10	5	05-Jan-24 A	19-Jan-24
A00476	Submit Flood Hazard Development Permit Application	0	0		19-Jan-24
A00432	Regulatory Review & Approval of Flood Hazard Development Submission	30	30	22-Jan-24	04-Mar-24
Historic Preservation (incl. Section 106 Review)					
A00614	HP Landmark Designation of Bean Building	0	0	19-Oct-22 A	
A00436	Prepare Draft of HP Submission Materials (Application Type to be Determined)	39	0	24-Apr-23 A	27-Oct-23 A
A00438	Review and Finalize HP Submission	10	0	30-Oct-23 A	10-Nov-23 A
A00478	Submit HP Application	0	0		13-Nov-23 A
A00284	Historic Preservation Workshop 1	0	0		06-Dec-23 A



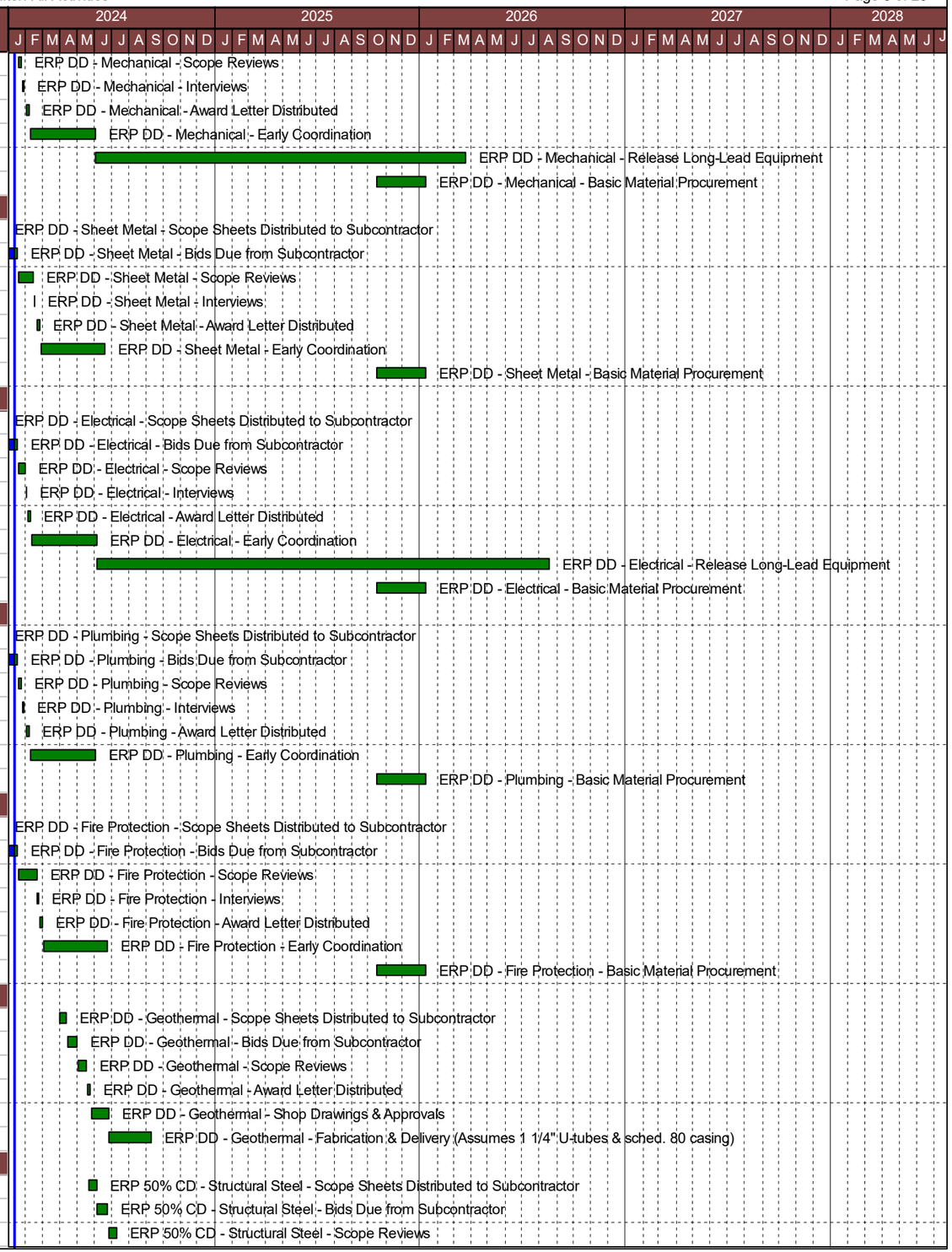
Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
A00285	Historic Preservation Workshop 2	0	0		06-Mar-24*
A00287	HP Vote or Advisory Opinion	0	0		03-Apr-24*
State & Federal Permitting					
Board of Harbor Commissioners Marine Construction Permit					
A00288	Prepare Draft of Marine Construction Permit Application	39	35	24-Apr-23 A	04-Mar-24
A00440	Review and Finalize Marine Construction Application	19	19	05-Mar-24	29-Mar-24
A00480	Submit Marine Construction Permit Application	0	0		29-Mar-24
A00441	Board of Harbor Commissioners Workshop (last Tues of the month)	0	0		09-Apr-24*
A00442	Board of Harbor Commissioners Hearing (2nd Thurs of the month)	0	0		19-Apr-24*
Natural Resources Permits					
Phase 1 (Shoreline Work & Pier/Codfish Bldg)					
A00555	Prepare Draft of NRPA Application	39	1	24-Apr-23 A	12-Jan-24
A00558	Review and Finalize NRPA Submission	9	9	16-Jan-24	26-Jan-24
A00569	Pre-Application Meeting with DEP & ACOE	0	0		18-Jan-24*
A00559	Submit NRPA Application	0	0		26-Jan-24
A00560	ACOE Review	63	63	29-Jan-24	26-Apr-24
A00570	DEP & NRPA Review	63	63	29-Jan-24	26-Apr-24
Phase 2 (Bike/Pedestrian Path @ Tukey's Bridge)					
A00293	Prepare Draft of NRPA Application	40	40	18-Oct-24	16-Dec-24
A00445	Review and Finalize NRPA Submission	10	10	17-Dec-24	31-Dec-24
A00482	Submit NRPA Application	0	0		31-Dec-24
A00446	DEP and ACOE Review	94	94	02-Jan-25	16-May-25
Federal Aviation Administration					
A00295	Prepare Notice of Proposed Construction or Alteration (Form 7460-1)	5	5	25-Mar-24	29-Mar-24
A00447	IDEALS Review of Notice of Proposed Construction or Alteration	4	4	01-Apr-24	04-Apr-24
A00448	FAA Issues Determination of No Hazard Letter	19	19	05-Apr-24	02-May-24
Building Permits					
A00620	Abatement Notification - Application thru Issuance	10	0	01-Feb-23 A	14-Feb-23 A
A00635	Demolition Permit - Submit, Review & Receipt	20	0	19-Apr-23 A	23-May-23 A
A00528	Demolition & Building Permit (Codfish Building & Pier) - Application thru Issuance	29	29	18-Mar-24	26-Apr-24
A00600	Building Permit - Roux Institute & Site - Application thru Issuance	130	130	20-Jun-24	26-Dec-24
Early Procurement					
ERP - Bid Package Creation					
A00617	ERP - Bid Package Creation - Envelope (Design-Assist)	15	0	11-Jul-23 A	31-Jul-23 A
A00626	ERP - Bid Package Creation - MEP (Design-Assist)	20	0	23-Oct-23 A	06-Dec-23 A
A00638	ERP - Bid Package Creation - Mass Timber (Design-Assist)	20	0	23-Oct-23 A	08-Dec-23 A
A00618	ERP - Bid Package Creation - Deep Foundations (Design-Assist)	10	0	23-Oct-23 A	15-Dec-23 A
A00664	ERP - Bid Package Creation - Sitework	10	10	18-Mar-24	29-Mar-24
A00636	ERP - Bid Package Creation - Geothermal	10	10	18-Mar-24	29-Mar-24
A00633	ERP - Bid Package Creation - Concrete Foundations	5	5	02-May-24	08-May-24
A00668	ERP - Bid Package Creation - Elevators	5	5	02-May-24	08-May-24
A00643	ERP - Bid Package Creation - Concrete Cores	5	5	02-May-24	08-May-24
A00728	ERP - Bid Package Creation - Below-Grade Waterproofing & Insulation	10	10	02-May-24	15-May-24
A00738	ERP - Bid Package Creation - Miscelaneous Metals & Egress Stairs	10	10	02-May-24	15-May-24
A00667	ERP - Bid Package Creation - Structural Steel	15	15	02-May-24	22-May-24
Early Release Packages - Issuance & Buyout					
ERP - Abatement & Demolition					
A00644	ERP - Abatement & Demolition - Estimating, RFP & Award	50	0	14-Nov-22 A	31-Jan-23 A
A00684	ERP - Abatement & Demolition - Site Walk	1	0	01-Feb-23 A	01-Feb-23 A



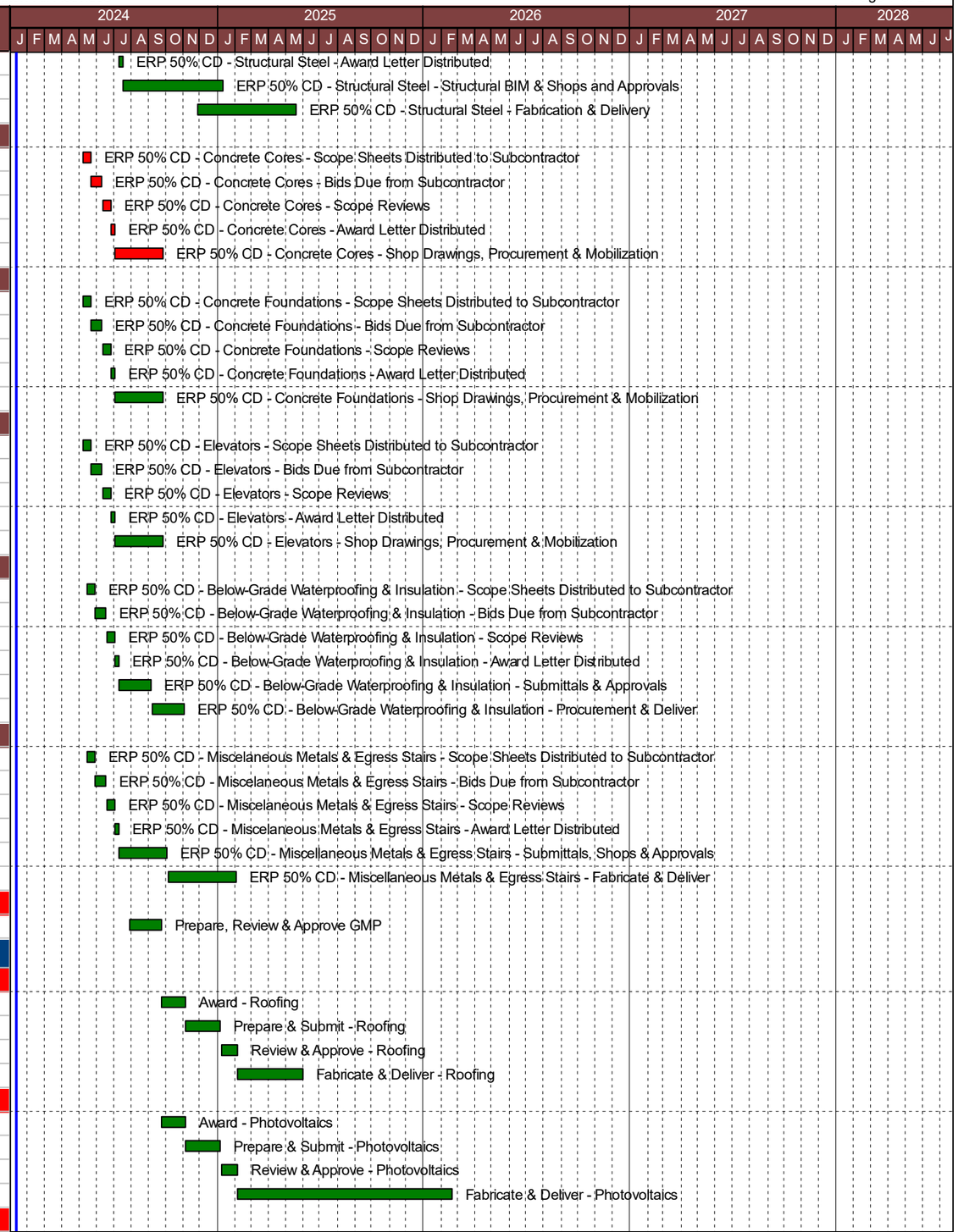
Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
A00642	ERP - Abatement & Demolition - Procurement & Mobilization	12	0	02-Feb-23 A	17-Feb-23 A
ERP - Envelope					
A1660	ERP #2 - Envelope Bidding Package Issued from Design Team	0	0		31-Jul-23 A
A1670	Price & Present - ERP #2 Envelope	49	0	31-Jul-23 A	18-Sep-23 A
A1900	Review and Price Design Development Documents	14	0	19-Sep-23 A	02-Nov-23 A
A2070	Finalize Recommendation for Award - Envelope	13	0	03-Nov-23 A	20-Dec-23 A
A1680	Owner Approval - Envelope Design Assist Package	19	5	21-Dec-23 A	19-Jan-24
A1690	Award Envelope Design Assist Package	0	0		19-Jan-24
A1710	Samples & Material Selections - Envelope	90	90	22-Jan-24	29-May-24
A1700	Design Assist - Envelope	150	150	22-Jan-24	22-Aug-24
A1720	VMU Shops / Procurement / Approvals - Envelope	250	250	16-Apr-24	14-Apr-25
A1730	PMU Shops / Procurement / Approvals - Envelope	250	250	16-Apr-24	14-Apr-25
A1740	Project Shop Drawings and Approvals - Envelope	110	110	29-Jul-24	06-Jan-25
A1750	Material Lead Time & Fabrication - Envelope	240	240	07-Jan-25	19-Dec-25
ERP DD - Design Assist - Mass Timber					
A8350	ERP DD - Mass Timber - Scope Sheets Distributed to Subcontractor	20	0	11-Dec-23 A	09-Jan-24 A
A8360	ERP DD - Mass Timber - Bids Due from Subcontractor	27	25	10-Jan-24 A	16-Feb-24
A8370	ERP DD - Mass Timber - Scope Reviews	11	11	20-Feb-24	05-Mar-24
A8380	ERP DD - Mass Timber - Award Letter Distributed	5	5	06-Mar-24	12-Mar-24
A1620	Mass Timber Design Integration	229	229	13-Mar-24	10-Feb-25
A1420	Prepare & Submit - Mass Timber	20	20	11-Feb-25	11-Mar-25
A1430	Review & Approve - Mass Timber	25	25	12-Mar-25	15-Apr-25
A1440	Fab & Deliver - Mass Timber	100	100	16-Apr-25	08-Sep-25
ERP DD - Sitework					
A00705	ERP DD - Sitework - Scope Sheets Distributed to Subcontractor	10	10	01-Apr-24	12-Apr-24
A00715	ERP DD - Sitework - Bids Due from Subcontractor	13	13	16-Apr-24	02-May-24
A00725	ERP DD - Sitework - Scope Reviews	11	11	03-May-24	17-May-24
A00625	ERP DD - Sitework - Award Letter Distributed	5	5	20-May-24	24-May-24
A00645	ERP DD - Sitework - Submit & Approve	60	60	28-May-24	20-Aug-24
A00653	ERP DD - Sitework - Moblization	10	10	02-Jul-24	16-Jul-24
A00623	ERP DD - Sitework - Procurement	60	60	21-Aug-24	15-Nov-24
ERP DD - SOE					
A8390	ERP DD - SOE - Scope Sheets Distributed to Subcontractor	10	10	01-Apr-24	12-Apr-24
A8400	ERP DD - SOE - Bids Due from Subcontractor	13	13	16-Apr-24	02-May-24
A8410	ERP DD - SOE - Scope Reviews	11	11	03-May-24	17-May-24
A8420	ERP DD - SOE - Award Letter Distributed	5	5	20-May-24	24-May-24
A00655	ERP DD - SOE - Sheet Submittal & Sheeting Size Release	10	10	28-May-24	10-Jun-24
A00685	ERP DD - SOE - Engineering Package	15	15	28-May-24	17-Jun-24
A00665	ERP DD - SOE - Procure Sheets	60	60	11-Jun-24	04-Sep-24
A00695	ERP DD - SOE - Review & Approve	15	15	18-Jun-24	09-Jul-24
ERP DD - Deep Foundations					
A8430	ERP DD - Deep Foundations - Scope Sheets Distributed to Subcontractor	19	2	18-Dec-23 A	16-Jan-24
A8440	ERP DD - Deep Foundations - Bids Due from Subcontractor	23	23	17-Jan-24	16-Feb-24
A8450	ERP DD - Deep Foundations - Scope Reviews	10	10	20-Feb-24	04-Mar-24
A8460	ERP DD - Deep Foundations - Award Letter Distributed	5	5	05-Mar-24	11-Mar-24
A00628	ERP DD - Deep Foundations - Design-Assist	50	50	12-Mar-24	21-May-24
A00629	ERP DD - Deep Foundations - Procurement & Mobilization	55	55	22-May-24	08-Aug-24
ERP DD - Mechanical					
A8510	ERP DD - Mechanical - Scope Sheets Distributed to Subcontractor	10	0	07-Dec-23 A	20-Dec-23 A
A8520	ERP DD - Mechanical - Bids Due from Subcontractor	17	3	21-Dec-23 A	17-Jan-24



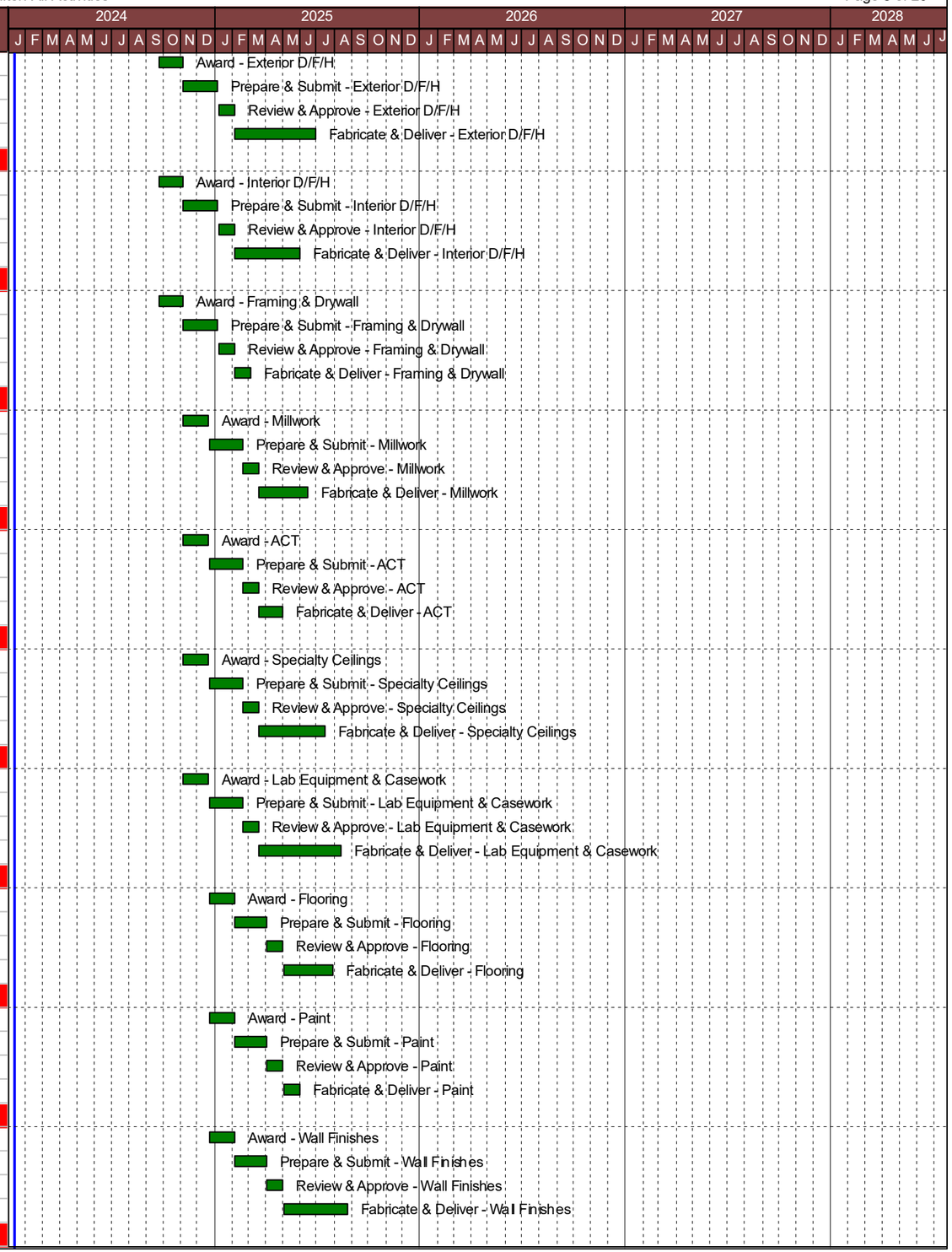
Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
A8530	ERP DD - Mechanical - Scope Reviews	5	5	18-Jan-24	24-Jan-24
A8940	ERP DD - Mechanical - Interviews	3	3	25-Jan-24	29-Jan-24
A8540	ERP DD - Mechanical - Award Letter Distributed	5	5	01-Feb-24	07-Feb-24
A00657	ERP DD - Mechanical - Early Coordination	80	80	08-Feb-24	03-Jun-24
A00661	ERP DD - Mechanical - Release Long-Lead Equipment	450	450	04-Jun-24	23-Mar-26
A00671	ERP DD - Mechanical - Basic Material Procurement	60	60	15-Oct-25	12-Jan-26
ERP DD - Sheet Metal					
A8970	ERP DD - Sheet Metal - Scope Sheets Distributed to Subcontractor	10	0	07-Dec-23 A	20-Dec-23 A
A8980	ERP DD - Sheet Metal - Bids Due from Subcontractor	17	3	21-Dec-23 A	17-Jan-24
A8990	ERP DD - Sheet Metal - Scope Reviews	20	20	18-Jan-24	14-Feb-24
A9010	ERP DD - Sheet Metal - Interviews	2	2	15-Feb-24	16-Feb-24
A8960	ERP DD - Sheet Metal - Award Letter Distributed	5	5	20-Feb-24	26-Feb-24
A8930	ERP DD - Sheet Metal - Early Coordination	80	80	27-Feb-24	19-Jun-24
A8950	ERP DD - Sheet Metal - Basic Material Procurement	60	60	15-Oct-25	12-Jan-26
ERP DD - Electrical					
A8830	ERP DD - Electrical - Scope Sheets Distributed to Subcontractor	10	0	07-Dec-23 A	20-Dec-23 A
A8840	ERP DD - Electrical - Bids Due from Subcontractor	17	3	21-Dec-23 A	17-Jan-24
A8850	ERP DD - Electrical - Scope Reviews	10	10	18-Jan-24	31-Jan-24
A9200	ERP DD - Electrical - Interviews	2	2	01-Feb-24	02-Feb-24
A8820	ERP DD - Electrical - Award Letter Distributed	5	5	05-Feb-24	09-Feb-24
A8790	ERP DD - Electrical - Early Coordination	80	80	12-Feb-24	05-Jun-24
A8800	ERP DD - Electrical - Release Long-Lead Equipment	550	550	06-Jun-24	17-Aug-26
A8810	ERP DD - Electrical - Basic Material Procurement	60	60	15-Oct-25	12-Jan-26
ERP DD - Plumbing					
A8900	ERP DD - Plumbing - Scope Sheets Distributed to Subcontractor	10	0	07-Dec-23 A	20-Dec-23 A
A8910	ERP DD - Plumbing - Bids Due from Subcontractor	17	3	21-Dec-23 A	17-Jan-24
A8920	ERP DD - Plumbing - Scope Reviews	5	5	18-Jan-24	24-Jan-24
A9210	ERP DD - Plumbing - Interviews	3	3	25-Jan-24	29-Jan-24
A8890	ERP DD - Plumbing - Award Letter Distributed	5	5	01-Feb-24	07-Feb-24
A8860	ERP DD - Plumbing - Early Coordination	80	80	08-Feb-24	03-Jun-24
A8880	ERP DD - Plumbing - Basic Material Procurement	60	60	15-Oct-25	12-Jan-26
ERP DD - Fire Protection					
A9040	ERP DD - Fire Protection - Scope Sheets Distributed to Subcontractor	10	0	07-Dec-23 A	20-Dec-23 A
A9050	ERP DD - Fire Protection - Bids Due from Subcontractor	17	3	21-Dec-23 A	17-Jan-24
A9060	ERP DD - Fire Protection - Scope Reviews	24	24	18-Jan-24	21-Feb-24
A9220	ERP DD - Fire Protection - Interviews	2	2	22-Feb-24	23-Feb-24
A9030	ERP DD - Fire Protection - Award Letter Distributed	5	5	26-Feb-24	01-Mar-24
A9000	ERP DD - Fire Protection - Early Coordination	80	80	04-Mar-24	25-Jun-24
A9020	ERP DD - Fire Protection - Basic Material Procurement	60	60	15-Oct-25	12-Jan-26
ERP DD - Geothermal					
A8470	ERP DD - Geothermal - Scope Sheets Distributed to Subcontractor	10	10	01-Apr-24	12-Apr-24
A8480	ERP DD - Geothermal - Bids Due from Subcontractor	13	13	16-Apr-24	02-May-24
A8490	ERP DD - Geothermal - Scope Reviews	11	11	03-May-24	17-May-24
A8500	ERP DD - Geothermal - Award Letter Distributed	5	5	20-May-24	24-May-24
A1800	ERP DD - Geothermal - Shop Drawings & Approvals	22	22	28-May-24	26-Jun-24
A1810	ERP DD - Geothermal - Fabrication & Delivery (Assumes 1 1/4" U-tubes & sched. 80 casing)	53	53	27-Jun-24	11-Sep-24
ERP 50% CD - Structural Steel					
A8550	ERP 50% CD - Structural Steel - Scope Sheets Distributed to Subcontractor	10	10	23-May-24	06-Jun-24
A8560	ERP 50% CD - Structural Steel - Bids Due from Subcontractor	13	13	07-Jun-24	25-Jun-24
A8570	ERP 50% CD - Structural Steel - Scope Reviews	11	11	26-Jun-24	11-Jul-24



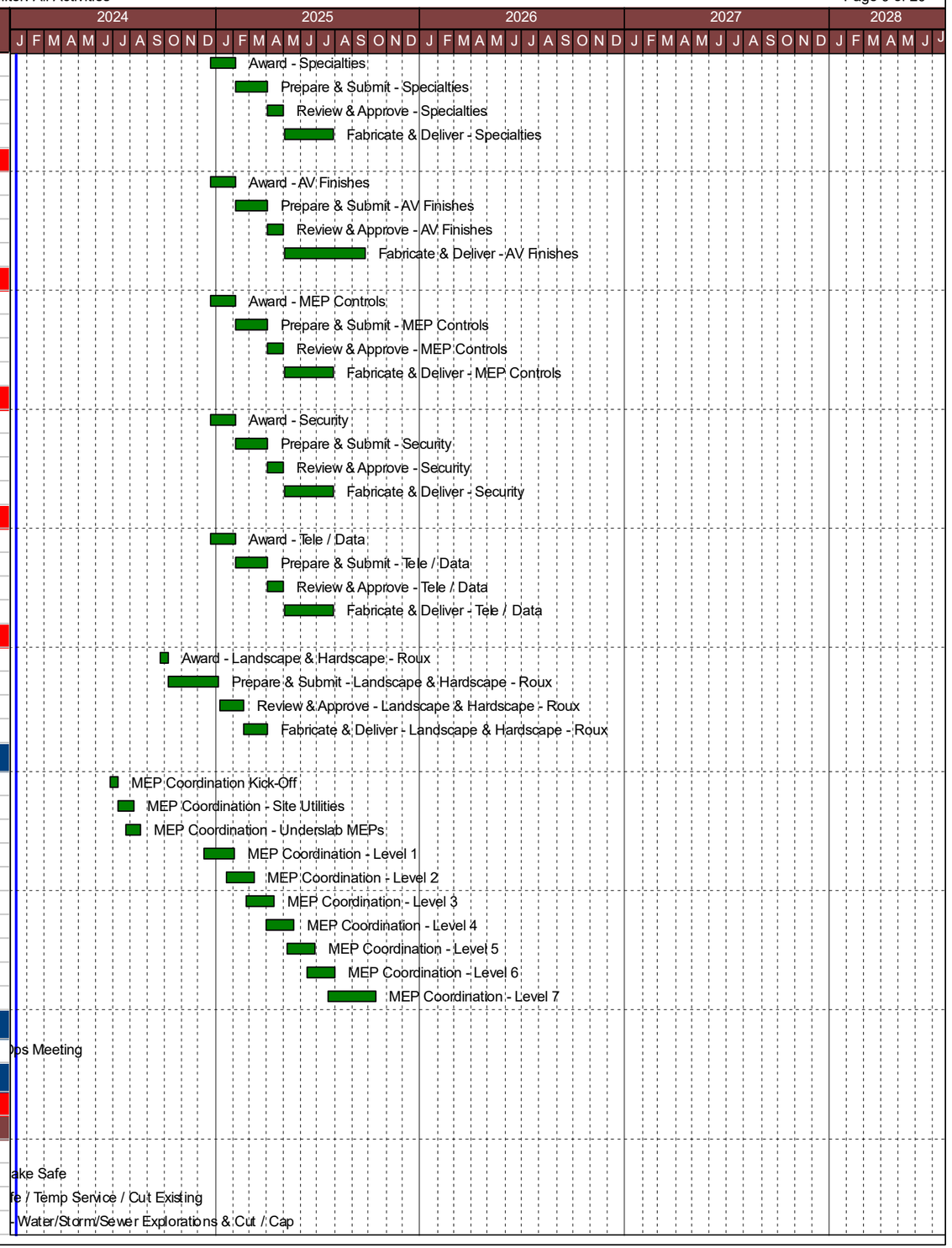
Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
A8580	ERP 50% CD - Structural Steel - Award Letter Distributed	5	5	12-Jul-24	18-Jul-24
A00630	ERP 50% CD - Structural Steel - Structural BIM & Shops and Approvals	120	120	19-Jul-24	10-Jan-25
A00654	ERP 50% CD - Structural Steel - Fabrication & Delivery	120	120	27-Nov-24	21-May-25
ERP 50% CD - Concrete Cores					
A8590	ERP 50% CD - Concrete Cores - Scope Sheets Distributed to Subcontractor	10	10	09-May-24	22-May-24
A8600	ERP 50% CD - Concrete Cores - Bids Due from Subcontractor	13	13	23-May-24	11-Jun-24
A8610	ERP 50% CD - Concrete Cores - Scope Reviews	11	11	12-Jun-24	26-Jun-24
A8620	ERP 50% CD - Concrete Cores - Award Letter Distributed	5	5	27-Jun-24	03-Jul-24
A1770	ERP 50% CD - Concrete Cores - Shop Drawings, Procurement & Mobilization	60	60	05-Jul-24	27-Sep-24
ERP 50% CD - Concrete Foundations					
A8630	ERP 50% CD - Concrete Foundations - Scope Sheets Distributed to Subcontractor	10	10	09-May-24	22-May-24
A8640	ERP 50% CD - Concrete Foundations - Bids Due from Subcontractor	13	13	23-May-24	11-Jun-24
A8650	ERP 50% CD - Concrete Foundations - Scope Reviews	11	11	12-Jun-24	26-Jun-24
A8660	ERP 50% CD - Concrete Foundations - Award Letter Distributed	5	5	27-Jun-24	03-Jul-24
A00662	ERP 50% CD - Concrete Foundations - Shop Drawings, Procurement & Mobilization	60	60	05-Jul-24	27-Sep-24
ERP 50% CD - Elevators					
A8670	ERP 50% CD - Elevators - Scope Sheets Distributed to Subcontractor	10	10	09-May-24	22-May-24
A8680	ERP 50% CD - Elevators - Bids Due from Subcontractor	13	13	23-May-24	11-Jun-24
A8690	ERP 50% CD - Elevators - Scope Reviews	11	11	12-Jun-24	26-Jun-24
A8700	ERP 50% CD - Elevators - Award Letter Distributed	5	5	27-Jun-24	03-Jul-24
A00676	ERP 50% CD - Elevators - Shop Drawings, Procurement & Mobilization	60	60	05-Jul-24	27-Sep-24
ERP 50% CD - Below-Grade Waterproofing & Insulation					
A8710	ERP 50% CD - Below-Grade Waterproofing & Insulation - Scope Sheets Distributed to Subcont	10	10	16-May-24	30-May-24
A8720	ERP 50% CD - Below-Grade Waterproofing & Insulation - Bids Due from Subcontractor	13	13	31-May-24	18-Jun-24
A8730	ERP 50% CD - Below-Grade Waterproofing & Insulation - Scope Reviews	11	11	19-Jun-24	03-Jul-24
A8740	ERP 50% CD - Below-Grade Waterproofing & Insulation - Award Letter Distributed	5	5	05-Jul-24	11-Jul-24
A3180	ERP 50% CD - Below-Grade Waterproofing & Insulation - Submittals & Approvals	40	40	12-Jul-24	06-Sep-24
A3190	ERP 50% CD - Below-Grade Waterproofing & Insulation - Procurement & Deliver	40	40	09-Sep-24	04-Nov-24
ERP 50% CD - Miscelaneous Metals & Egress Stairs					
A8750	ERP 50% CD - Miscelaneous Metals & Egress Stairs - Scope Sheets Distributed to Subcontrac	10	10	16-May-24	30-May-24
A8760	ERP 50% CD - Miscelaneous Metals & Egress Stairs - Bids Due from Subcontractor	13	13	31-May-24	18-Jun-24
A8770	ERP 50% CD - Miscelaneous Metals & Egress Stairs - Scope Reviews	11	11	19-Jun-24	03-Jul-24
A8780	ERP 50% CD - Miscelaneous Metals & Egress Stairs - Award Letter Distributed	5	5	05-Jul-24	11-Jul-24
A3210	ERP 50% CD - Miscellaneous Metals & Egress Stairs - Submittals, Shops & Approvals	60	60	12-Jul-24	04-Oct-24
A3220	ERP 50% CD - Miscellaneous Metals & Egress Stairs - Fabricate & Deliver	80	80	07-Oct-24	03-Feb-25
GMP - 100% CDs (placeholder for discussion)					
A00678	Prepare, Review & Approve GMP	40	40	30-Jul-24	24-Sep-24
GMP Procurement					
Roofing					
A3120	Award - Roofing	30	30	25-Sep-24	06-Nov-24
A2970	Prepare & Submit - Roofing	40	40	07-Nov-24	07-Jan-25
A2980	Review & Approve - Roofing	20	20	08-Jan-25	05-Feb-25
A2990	Fabricate & Deliver - Roofing	80	80	06-Feb-25	02-Jun-25
Photovoltaics					
A3160	Award - Photovoltaics	30	30	25-Sep-24	06-Nov-24
A3090	Prepare & Submit - Photovoltaics	40	40	07-Nov-24	07-Jan-25
A3100	Review & Approve - Photovoltaics	20	20	08-Jan-25	05-Feb-25
A3110	Fabricate & Deliver - Photovoltaics	260	260	06-Feb-25	20-Feb-26
Exterior D/F/H					



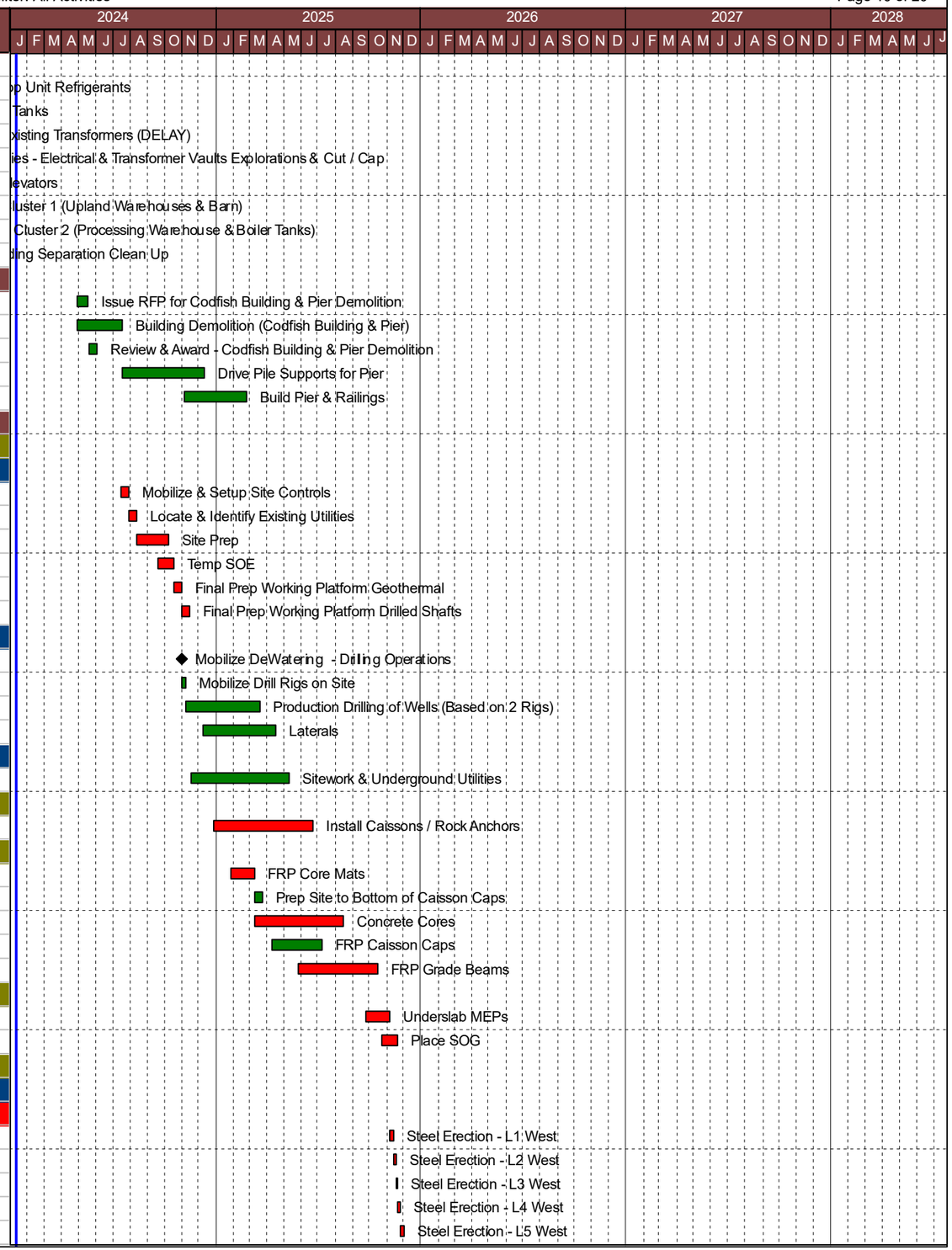
Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
A2390	Award - Exterior D/F/H	30	30	25-Sep-24	06-Nov-24
A2400	Prepare & Submit - Exterior D/F/H	40	40	07-Nov-24	07-Jan-25
A2410	Review & Approve - Exterior D/F/H	20	20	08-Jan-25	05-Feb-25
A2420	Fabricate & Deliver - Exterior D/F/H	100	100	06-Feb-25	30-Jun-25
Interior D/F/H					
A2430	Award - Interior D/F/H	30	30	25-Sep-24	06-Nov-24
A2440	Prepare & Submit - Interior D/F/H	40	40	07-Nov-24	07-Jan-25
A2450	Review & Approve - Interior D/F/H	20	20	08-Jan-25	05-Feb-25
A2460	Fabricate & Deliver - Interior D/F/H	80	80	06-Feb-25	02-Jun-25
Framing & Drywall					
A2470	Award - Framing & Drywall	30	30	25-Sep-24	06-Nov-24
A2480	Prepare & Submit - Framing & Drywall	40	40	07-Nov-24	07-Jan-25
A2490	Review & Approve - Framing & Drywall	20	20	08-Jan-25	05-Feb-25
A2500	Fabricate & Deliver - Framing & Drywall	20	20	06-Feb-25	06-Mar-25
Millwork					
A2510	Award - Millwork	30	30	07-Nov-24	20-Dec-24
A2520	Prepare & Submit - Millwork	40	40	23-Dec-24	20-Feb-25
A2530	Review & Approve - Millwork	20	20	21-Feb-25	20-Mar-25
A2540	Fabricate & Deliver - Millwork	60	60	21-Mar-25	16-Jun-25
ACT					
A3130	Award - ACT	30	30	07-Nov-24	20-Dec-24
A3000	Prepare & Submit - ACT	40	40	23-Dec-24	20-Feb-25
A3010	Review & Approve - ACT	20	20	21-Feb-25	20-Mar-25
A3020	Fabricate & Deliver - ACT	30	30	21-Mar-25	02-May-25
Specialty Ceilings					
A3140	Award - Specialty Ceilings	30	30	07-Nov-24	20-Dec-24
A3030	Prepare & Submit - Specialty Ceilings	40	40	23-Dec-24	20-Feb-25
A3040	Review & Approve - Specialty Ceilings	20	20	21-Feb-25	20-Mar-25
A3050	Fabricate & Deliver - Specialty Ceilings	80	80	21-Mar-25	15-Jul-25
Lab Equipment & Casework					
A3150	Award - Lab Equipment & Casework	30	30	07-Nov-24	20-Dec-24
A3060	Prepare & Submit - Lab Equipment & Casework	40	40	23-Dec-24	20-Feb-25
A3070	Review & Approve - Lab Equipment & Casework	20	20	21-Feb-25	20-Mar-25
A3080	Fabricate & Deliver - Lab Equipment & Casework	100	100	21-Mar-25	12-Aug-25
Flooring					
A2550	Award - Flooring	30	30	23-Dec-24	05-Feb-25
A2560	Prepare & Submit - Flooring	40	40	06-Feb-25	03-Apr-25
A2570	Review & Approve - Flooring	20	20	04-Apr-25	02-May-25
A2580	Fabricate & Deliver - Flooring	60	60	05-May-25	29-Jul-25
Paint					
A2590	Award - Paint	30	30	23-Dec-24	05-Feb-25
A2600	Prepare & Submit - Paint	40	40	06-Feb-25	03-Apr-25
A2610	Review & Approve - Paint	20	20	04-Apr-25	02-May-25
A2620	Fabricate & Deliver - Paint	20	20	05-May-25	02-Jun-25
Wall Finishes					
A2630	Award - Wall Finishes	30	30	23-Dec-24	05-Feb-25
A2640	Prepare & Submit - Wall Finishes	40	40	06-Feb-25	03-Apr-25
A2650	Review & Approve - Wall Finishes	20	20	04-Apr-25	02-May-25
A2660	Fabricate & Deliver - Wall Finishes	80	80	05-May-25	26-Aug-25
Specialties					



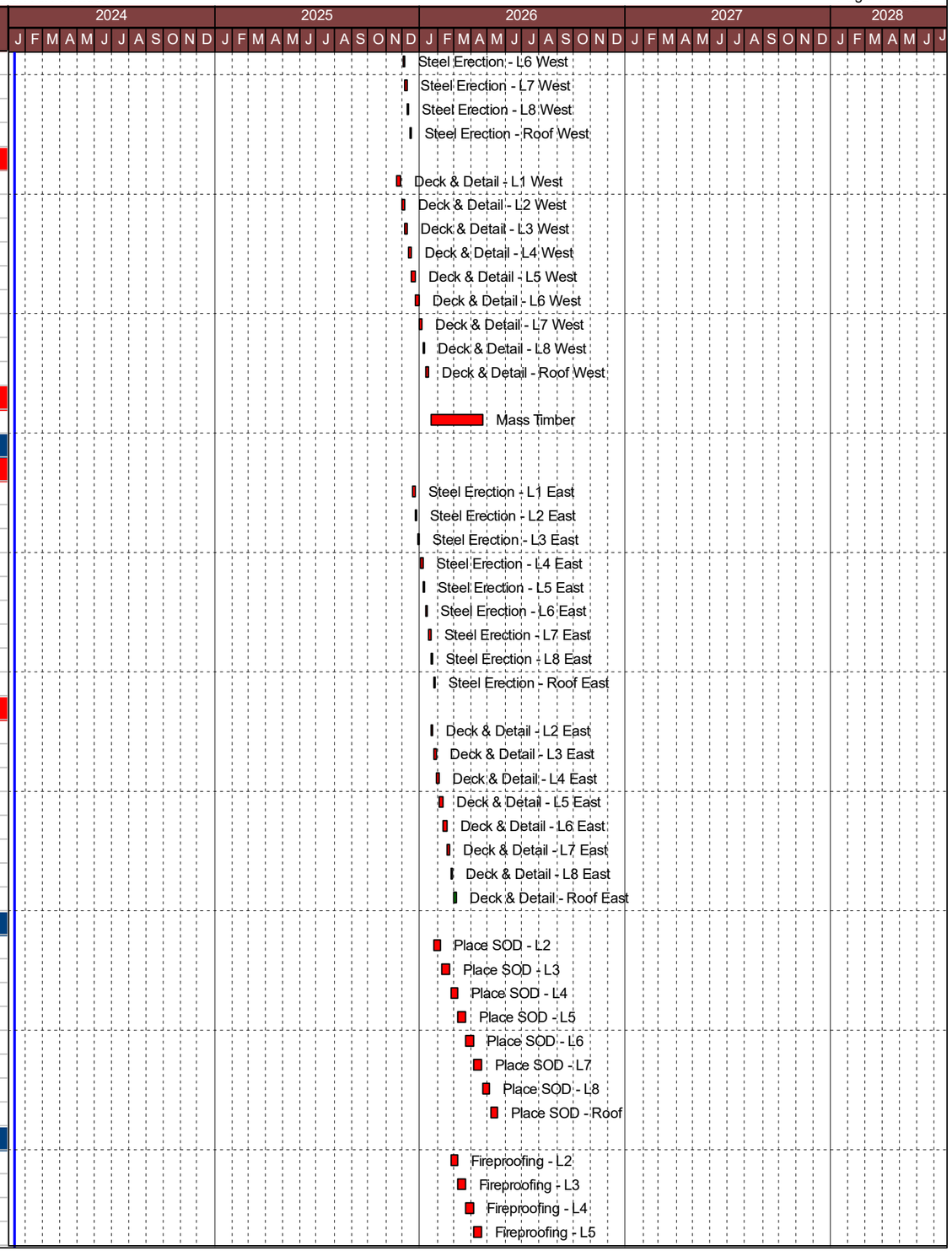
Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
A2670	Award - Specialties	30	30	23-Dec-24	05-Feb-25
A2680	Prepare & Submit - Specialties	40	40	06-Feb-25	03-Apr-25
A2690	Review & Approve - Specialties	20	20	04-Apr-25	02-May-25
A2700	Fabricate & Deliver - Specialties	60	60	05-May-25	29-Jul-25
AV Finishes					
A2710	Award - AV Finishes	30	30	23-Dec-24	05-Feb-25
A2720	Prepare & Submit - AV Finishes	40	40	06-Feb-25	03-Apr-25
A2730	Review & Approve - AV Finishes	20	20	04-Apr-25	02-May-25
A2740	Fabricate & Deliver - AV Finishes	100	100	05-May-25	24-Sep-25
MEP Controls					
A9080	Award - MEP Controls	30	30	23-Dec-24	05-Feb-25
A9090	Prepare & Submit - MEP Controls	40	40	06-Feb-25	03-Apr-25
A9100	Review & Approve - MEP Controls	20	20	04-Apr-25	02-May-25
A9110	Fabricate & Deliver - MEP Controls	60	60	05-May-25	29-Jul-25
Security					
A9120	Award - Security	30	30	23-Dec-24	05-Feb-25
A9130	Prepare & Submit - Security	40	40	06-Feb-25	03-Apr-25
A9140	Review & Approve - Security	20	20	04-Apr-25	02-May-25
A9150	Fabricate & Deliver - Security	60	60	05-May-25	29-Jul-25
Tele / Data					
A9160	Award - Tele / Data	30	30	23-Dec-24	05-Feb-25
A9170	Prepare & Submit - Tele / Data	40	40	06-Feb-25	03-Apr-25
A9180	Review & Approve - Tele / Data	20	20	04-Apr-25	02-May-25
A9190	Fabricate & Deliver - Tele / Data	60	60	05-May-25	29-Jul-25
Landscape & Hardscape					
A1860	Award - Landscape & Hardscape - Roux	10	10	25-Sep-24	08-Oct-24
A1870	Prepare & Submit - Landscape & Hardscape - Roux	60	60	09-Oct-24	07-Jan-25
A1880	Review & Approve - Landscape & Hardscape - Roux	30	30	08-Jan-25	20-Feb-25
A1890	Fabricate & Deliver - Landscape & Hardscape - Roux	30	30	21-Feb-25	03-Apr-25
MEP Coordination					
A2870	MEP Coordination Kick-Off	10	10	26-Jun-24	10-Jul-24
A2750	MEP Coordination - Site Utilities	20	20	11-Jul-24	07-Aug-24
A2760	MEP Coordination - Underslab MEPs	20	20	25-Jul-24	21-Aug-24
A2770	MEP Coordination - Level 1	35	35	12-Dec-24	03-Feb-25
A2780	MEP Coordination - Level 2	35	35	21-Jan-25	11-Mar-25
A2790	MEP Coordination - Level 3	35	35	26-Feb-25	15-Apr-25
A2800	MEP Coordination - Level 4	35	35	02-Apr-25	21-May-25
A2810	MEP Coordination - Level 5	35	35	08-May-25	26-Jun-25
A2820	MEP Coordination - Level 6	35	35	13-Jun-25	01-Aug-25
A2830	MEP Coordination - Level 7	60	60	21-Jul-25	14-Oct-25
Pre-Ops Meetings					
A1000	Demo & Abatement - Pre-Ops Meeting	0	0		15-Feb-23 A
Construction					
Roux Institute Building & Site					
Demo & Abatement					
A00619	Abatement	40	0	01-Mar-23 A	07-Apr-23 A
A00531	Plumbing Cut / Cap / Make Safe	15	0	06-Mar-23 A	23-Mar-23 A
A00521	Electrical Make Safe / Temp Service / Cut Existing	55	0	06-Mar-23 A	19-May-23 A
A00541	Underground Utilities - Water/Storm/Sewer Explorations & Cut / Cap	15	0	22-Mar-23 A	14-Apr-23 A



Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
A00561	Boiler Demo	5	0	10-Apr-23 A	26-Apr-23 A
A00581	Decommission Rooftop Unit Refrigerants	2	0	13-Apr-23 A	14-Apr-23 A
A00591	Decommission Fuel Tanks	3	0	01-May-23 A	03-May-23 A
A00681	CMP Disconnect Existing Transformers (DELAY)	1	0	15-May-23 A	15-May-23 A
A00551	Underground Utilities - Electrical & Transformer Vaults Explorations & Cut / Cap	2	0	16-May-23 A	23-May-23 A
A00571	Decommission Elevators	3	0	05-Jun-23 A	05-Jun-23 A
A00601	Demolition - Cluster 1 (Upland Warehouses & Barn)	24	0	05-Jun-23 A	07-Jul-23 A
A00611	Demolition - Cluster 2 (Processing Warehouse & Boiler Tanks)	15	0	10-Jul-23 A	28-Jul-23 A
A00641	Bean Building Separation Clean Up	15	0	31-Jul-23 A	18-Aug-23 A
Pier & Codfish					
A00608	Issue RFP for Codfish Building & Pier Demolition	15	15	29-Apr-24	17-May-24
A00598	Building Demolition (Codfish Building & Pier)	57	57	29-Apr-24	18-Jul-24
A00748	Review & Award - Codfish Building & Pier Demolition	10	10	20-May-24	03-Jun-24
A00758	Drive Pile Supports for Pier	100	100	19-Jul-24	11-Dec-24
A00768	Build Pier & Railings	75	75	05-Nov-24	25-Feb-25
New Building Construction					
Enabling & Sitework					
Mobilization / Site Setup					
A2890	Mobilize & Setup Site Controls	10	10	17-Jul-24	30-Jul-24
A2900	Locate & Identify Existing Utilities	10	10	31-Jul-24	13-Aug-24
A2930	Site Prep	40	40	14-Aug-24	09-Oct-24
A2910	Temp SOE	20	20	19-Sep-24	17-Oct-24
A2920	Final Prep Working Platform Geothermal	10	10	18-Oct-24	31-Oct-24
A2940	Final Prep Working Platform Drilled Shafts	10	10	01-Nov-24	15-Nov-24
Geothermal					
A6370	Mobilize DeWatering - Drilling Operations	0	0	01-Nov-24	
A6380	Mobilize Drill Rigs on Site	5	5	01-Nov-24	07-Nov-24
A6390	Production Drilling of Wells (Based on 2 Rigs)	90	90	08-Nov-24	21-Mar-25
A6400	Laterals	90	90	10-Dec-24	18-Apr-25
Utilities					
A00651	Sitework & Underground Utilities	120	120	18-Nov-24	12-May-25
Deep Foundations					
A00648	Install Caissons / Rock Anchors	122	122	27-Dec-24	23-Jun-25
Foundations					
A00718	FRP Core Mats	30	30	28-Jan-25	11-Mar-25
A00698	Prep Site to Bottom of Caisson Caps	10	10	12-Mar-25	25-Mar-25
A00708	Concrete Cores	110	110	12-Mar-25	15-Aug-25
A00658	FRP Caisson Caps	60	60	11-Apr-25	08-Jul-25
A00688	FRP Grade Beams	100	100	27-May-25	16-Oct-25
SOG & Underslab MEPs					
A2950	Underslab MEPs	30	30	25-Sep-25	06-Nov-25
A2960	Place SOG	20	20	24-Oct-25	21-Nov-25
Superstructure					
West					
Steel Erection					
A6410	Steel Erection - L1 West	3	3	07-Nov-25	12-Nov-25
A6420	Steel Erection - L2 West	3	3	13-Nov-25	17-Nov-25
A6430	Steel Erection - L3 West	3	3	18-Nov-25	20-Nov-25
A6440	Steel Erection - L4 West	3	3	21-Nov-25	25-Nov-25
A6450	Steel Erection - L5 West	3	3	26-Nov-25	01-Dec-25



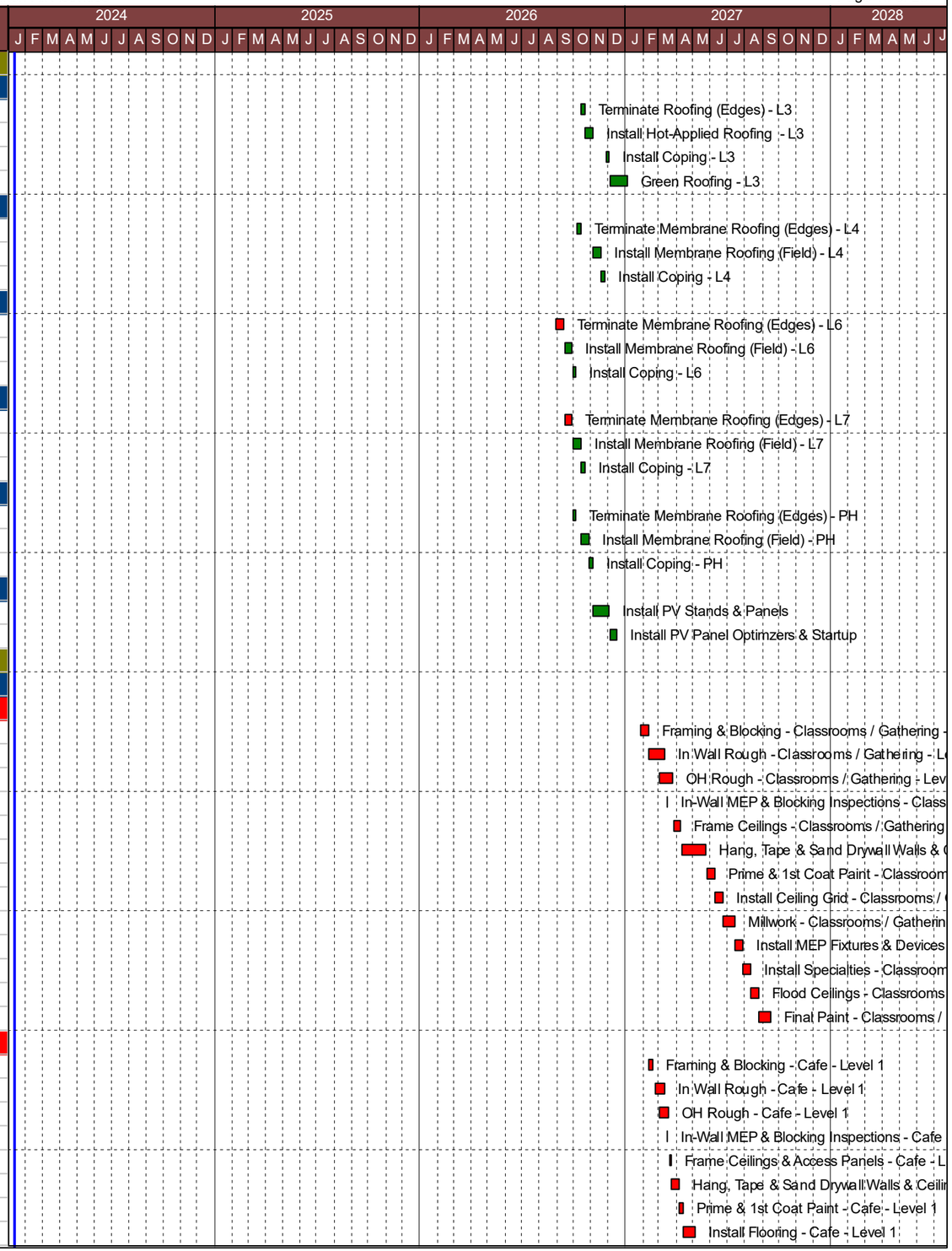
Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
A6460	Steel Erection - L6 West	3	3	02-Dec-25	04-Dec-25
A6470	Steel Erection - L7 West	3	3	05-Dec-25	09-Dec-25
A6480	Steel Erection - L8 West	3	3	10-Dec-25	12-Dec-25
A6490	Steel Erection - Roof West	3	3	15-Dec-25	17-Dec-25
Steel Deck & Detail					
A6500	Deck & Detail - L1 West	5	5	21-Nov-25	28-Nov-25
A6510	Deck & Detail - L2 West	4	4	01-Dec-25	04-Dec-25
A6520	Deck & Detail - L3 West	4	4	05-Dec-25	10-Dec-25
A6530	Deck & Detail - L4 West	4	4	11-Dec-25	16-Dec-25
A6540	Deck & Detail - L5 West	4	4	17-Dec-25	22-Dec-25
A6550	Deck & Detail - L6 West	4	4	23-Dec-25	29-Dec-25
A6560	Deck & Detail - L7 West	4	4	30-Dec-25	05-Jan-26
A6570	Deck & Detail - L8 West	4	4	06-Jan-26	09-Jan-26
A6580	Deck & Detail - Roof West	5	5	12-Jan-26	16-Jan-26
Mass Timber					
A3320	Mass Timber	65	65	20-Jan-26	22-Apr-26
East					
Steel Erection					
A6780	Steel Erection - L1 East	3	3	18-Dec-25	22-Dec-25
A6790	Steel Erection - L2 East	3	3	23-Dec-25	26-Dec-25
A6800	Steel Erection - L3 East	3	3	29-Dec-25	31-Dec-25
A6810	Steel Erection - L4 East	3	3	02-Jan-26	06-Jan-26
A6820	Steel Erection - L5 East	3	3	07-Jan-26	09-Jan-26
A6830	Steel Erection - L6 East	3	3	12-Jan-26	14-Jan-26
A6840	Steel Erection - L7 East	3	3	15-Jan-26	20-Jan-26
A6850	Steel Erection - L8 East	3	3	21-Jan-26	23-Jan-26
A6860	Steel Erection - Roof East	3	3	26-Jan-26	28-Jan-26
Steel Deck & Detail					
A6880	Deck & Detail - L2 East	4	4	20-Jan-26	23-Jan-26
A6890	Deck & Detail - L3 East	4	4	26-Jan-26	29-Jan-26
A6900	Deck & Detail - L4 East	4	4	30-Jan-26	04-Feb-26
A6910	Deck & Detail - L5 East	4	4	05-Feb-26	10-Feb-26
A6920	Deck & Detail - L6 East	4	4	11-Feb-26	17-Feb-26
A6930	Deck & Detail - L7 East	4	4	18-Feb-26	23-Feb-26
A6940	Deck & Detail - L8 East	4	4	24-Feb-26	27-Feb-26
A6950	Deck & Detail - Roof East	5	5	02-Mar-26	06-Mar-26
Slabs on Deck					
A6970	Place SOD - L2	10	10	26-Jan-26	06-Feb-26
A6980	Place SOD - L3	10	10	09-Feb-26	23-Feb-26
A6990	Place SOD - L4	10	10	24-Feb-26	09-Mar-26
A7000	Place SOD - L5	10	10	10-Mar-26	23-Mar-26
A7010	Place SOD - L6	10	10	24-Mar-26	06-Apr-26
A7020	Place SOD - L7	10	10	07-Apr-26	21-Apr-26
A7030	Place SOD - L8	10	10	22-Apr-26	05-May-26
A7040	Place SOD - Roof	10	10	06-May-26	19-May-26
Fireproofing					
A7060	Fireproofing - L2	10	10	24-Feb-26	09-Mar-26
A7070	Fireproofing - L3	10	10	10-Mar-26	23-Mar-26
A7080	Fireproofing - L4	10	10	24-Mar-26	06-Apr-26
A7090	Fireproofing - L5	10	10	07-Apr-26	21-Apr-26



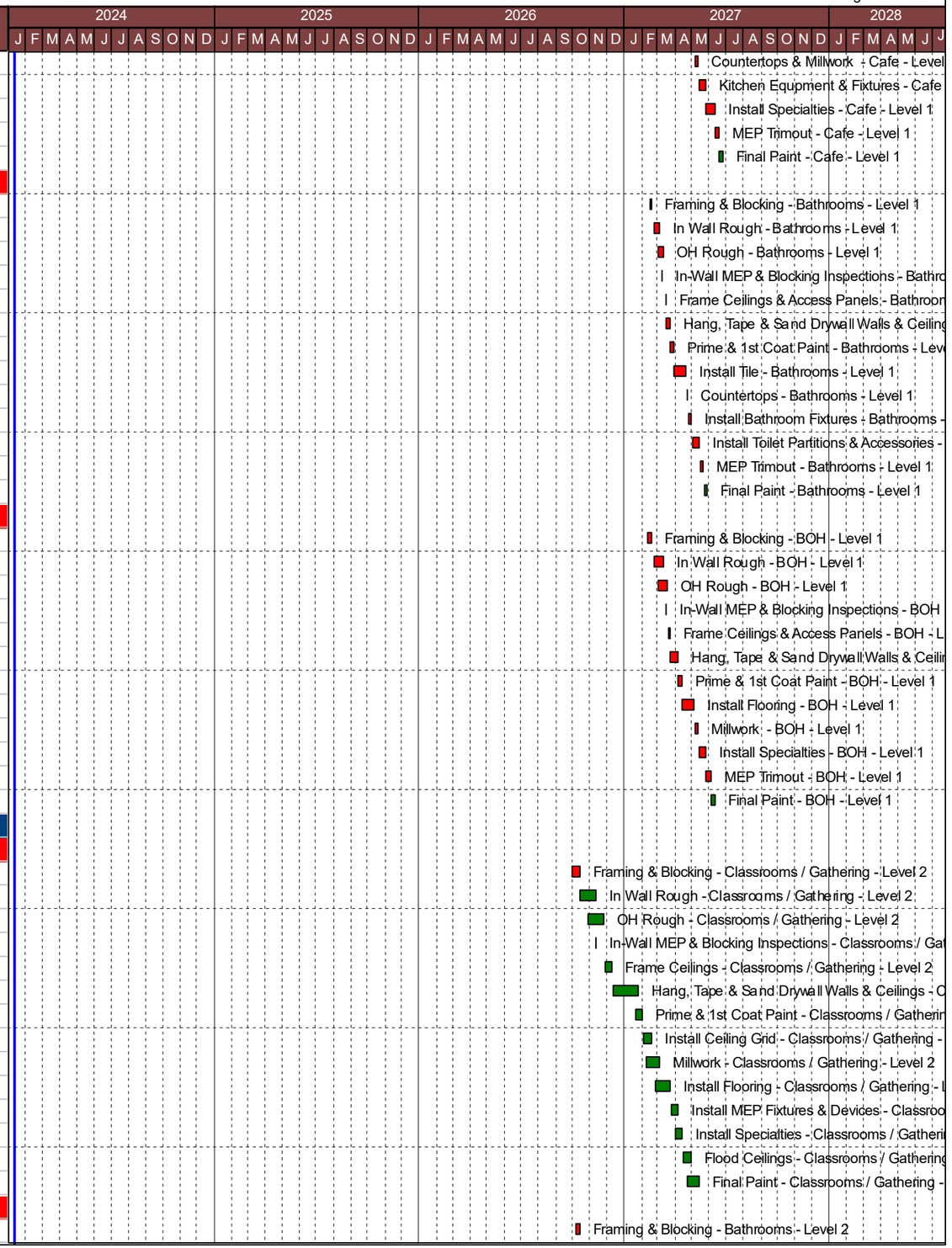
Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
A7100	Fireproofing - L6	10	10	22-Apr-26	05-May-26
A7110	Fireproofing - L7	10	10	06-May-26	19-May-26
A7120	Fireproofing - L8	10	10	20-May-26	03-Jun-26
A7130	Fireproofing - Roof	10	10	04-Jun-26	17-Jun-26
Facade					
Level 1					
A7140	Layout & Install Embeds - L1	8	8	07-Jan-26	16-Jan-26
A7150	Set Halfen Anchors - L1	15	15	10-Jul-26	30-Jul-26
A7160	Install Unitized CW - L1	10	10	15-Sep-26	28-Sep-26
A7170	Install Cassette Toggle System - L1	20	20	29-Sep-26	27-Oct-26
Level 2					
A7180	Layout & Install Embeds - L2	8	8	20-Jan-26	29-Jan-26
A7190	Set Halfen Anchors - L2	15	15	09-Feb-26	02-Mar-26
A7200	Install Unitized CW - L2	10	10	23-Apr-26	06-May-26
A7210	Install Cassette Toggle System - L2	10	10	07-May-26	20-May-26
A7220	Perimter Firesafing - L2	5	5	21-May-26	28-May-26
Level 3					
A7230	Layout & Install Embeds - L3	8	8	30-Jan-26	10-Feb-26
A7240	Set Halfen Anchors - L3	15	15	03-Mar-26	23-Mar-26
A7250	Install Unitized CW - L3	20	20	07-May-26	04-Jun-26
A7260	Install Cassette Toggle System - L3	10	10	05-Jun-26	18-Jun-26
A7270	Perimter Firesafing - L3	5	5	19-Jun-26	25-Jun-26
Level 4					
A7280	Layout & Install Embeds - L4	8	8	11-Feb-26	23-Feb-26
A7290	Set Halfen Anchors - L4	15	15	24-Mar-26	13-Apr-26
A7300	Install Unitized CW - L4	20	20	05-Jun-26	02-Jul-26
A7310	Install Cassette Toggle System - L4	5	5	06-Jul-26	10-Jul-26
A7320	Perimter Firesafing - L4	5	5	13-Jul-26	17-Jul-26
Level 5					
A7330	Layout & Install Embeds - L5	8	8	24-Feb-26	05-Mar-26
A7340	Set Halfen Anchors - L5	15	15	14-Apr-26	05-May-26
A7350	Install Unitized CW - L5	20	20	06-Jul-26	31-Jul-26
A7360	Install Cassette Toggle System - L5	5	5	03-Aug-26	07-Aug-26
A7370	Perimter Firesafing - L5	5	5	10-Aug-26	14-Aug-26
Level 6					
A7380	Layout & Install Embeds - L6	8	8	06-Mar-26	17-Mar-26
A7390	Set Halfen Anchors - L6	15	15	06-May-26	27-May-26
A7400	Install Unitized CW - L6	10	10	03-Aug-26	14-Aug-26
A7410	Install Cassette Toggle System - L6	5	5	17-Aug-26	21-Aug-26
A7420	Perimter Firesafing - L6	5	5	24-Aug-26	28-Aug-26
Level 7					
A7430	Layout & Install Embeds - L7	8	8	18-Mar-26	27-Mar-26
A7440	Set Halfen Anchors - L7	15	15	28-May-26	17-Jun-26
A7450	Install Unitized CW - L7	10	10	17-Aug-26	28-Aug-26
A7460	Perimter Firesafing - L7	5	5	31-Aug-26	04-Sep-26
Penthouse					
A7470	Layout & Install weld plates - PH	8	8	30-Mar-26	08-Apr-26
A7480	Set Halfen Anchors - PH	15	15	18-Jun-26	09-Jul-26
A7490	Install Unitized CW - PH	10	10	31-Aug-26	14-Sep-26
A7500	Install Vertical Rainscreen System - PH	10	10	15-Sep-26	28-Sep-26



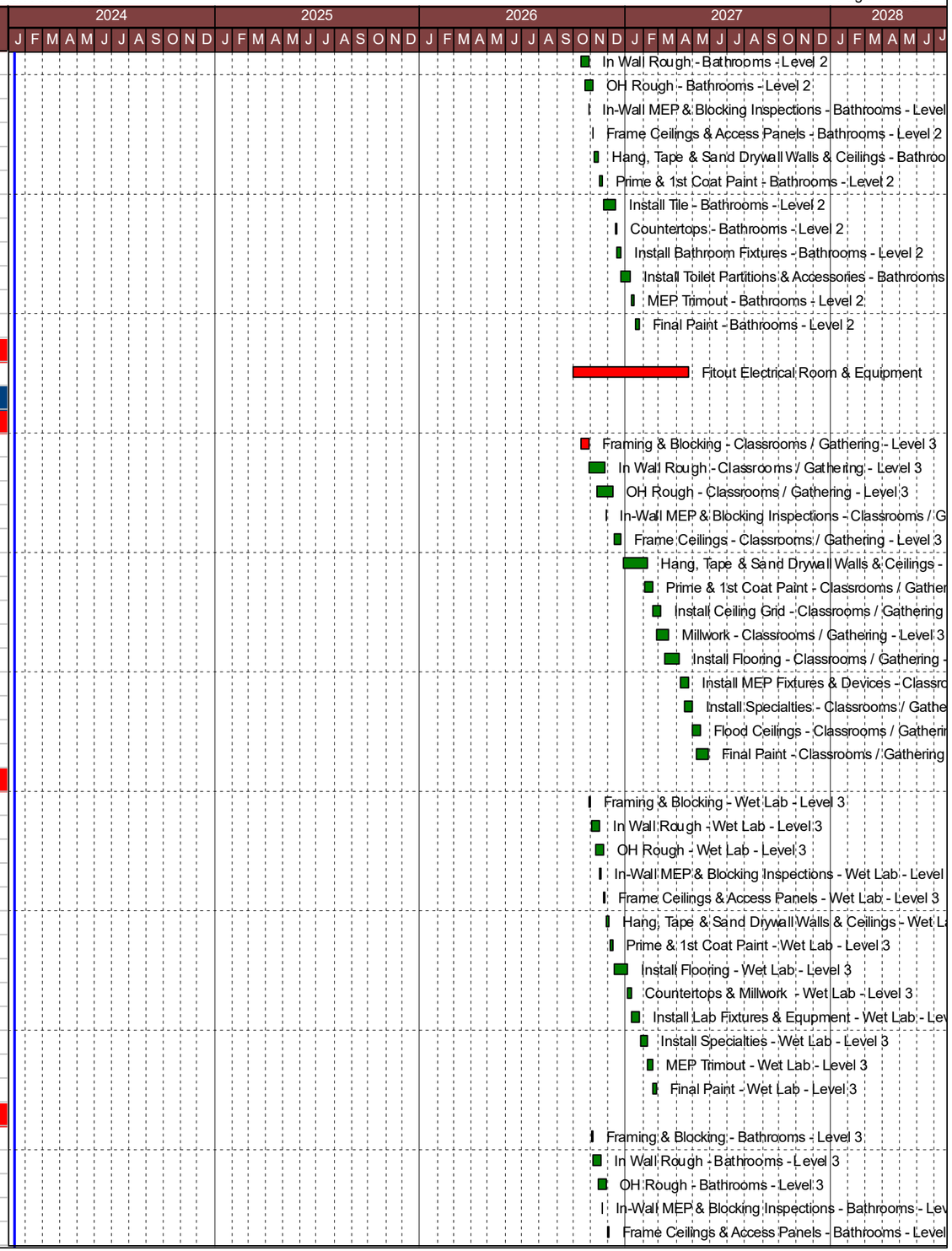
Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
Roof					
Level 3					
A7520	Terminate Roofing (Edges) - L3	5	5	14-Oct-26	20-Oct-26
A7510	Install Hot-Applied Roofing - L3	10	10	21-Oct-26	03-Nov-26
A7530	Install Coping - L3	5	5	27-Nov-26	03-Dec-26
A7540	Green Roofing - L3	20	20	04-Dec-26	04-Jan-27
Level 4					
A7560	Terminate Membrane Roofing (Edges) - L4	5	5	06-Oct-26	13-Oct-26
A7550	Install Membrane Roofing (Field) - L4	10	10	04-Nov-26	18-Nov-26
A7570	Install Coping - L4	5	5	19-Nov-26	25-Nov-26
Level 6					
A7620	Terminate Membrane Roofing (Edges) - L6	10	10	31-Aug-26	14-Sep-26
A7610	Install Membrane Roofing (Field) - L6	10	10	15-Sep-26	28-Sep-26
A7630	Install Coping - L6	5	5	29-Sep-26	05-Oct-26
Level 7					
A7670	Terminate Membrane Roofing (Edges) - L7	10	10	15-Sep-26	28-Sep-26
A7660	Install Membrane Roofing (Field) - L7	10	10	29-Sep-26	13-Oct-26
A7680	Install Coping - L7	5	5	14-Oct-26	20-Oct-26
Penthouse					
A7720	Terminate Membrane Roofing (Edges) - PH	5	5	29-Sep-26	05-Oct-26
A7710	Install Membrane Roofing (Field) - PH	10	10	14-Oct-26	27-Oct-26
A7730	Install Coping - PH	5	5	28-Oct-26	03-Nov-26
PV					
A7740	Install PV Stands & Panels	20	20	04-Nov-26	03-Dec-26
A7750	Install PV Panel Optimzers & Startup	10	10	04-Dec-26	17-Dec-26
Interior Fitout					
Level 1					
Classrooms / Gathering					
A4540	Framing & Blocking - Classrooms / Gathering - Level 1	10	10	29-Jan-27	11-Feb-27
A4550	In Wall Rough - Classrooms / Gathering - Level 1	20	20	12-Feb-27	12-Mar-27
A4570	OH Rough - Classrooms / Gathering - Level 1	20	20	01-Mar-27	26-Mar-27
A4560	In-Wall MEP & Blocking Inspections - Classrooms / Gathering - Level 1	1	1	15-Mar-27	15-Mar-27
A4580	Frame Ceilings - Classrooms / Gathering - Level 1	10	10	29-Mar-27	09-Apr-27
A4590	Hang, Tape & Sand Drywall Walls & Ceilings - Classrooms / Gathering - Level 1	30	30	12-Apr-27	24-May-27
A4600	Prime & 1st Coat Paint - Classrooms / Gathering - Level 1	10	10	25-May-27	08-Jun-27
A4610	Install Ceiling Grid - Classrooms / Gathering - Level 1	10	10	09-Jun-27	22-Jun-27
A4620	Millwork - Classrooms / Gathering - Level 1	15	15	23-Jun-27	14-Jul-27
A4630	Install MEP Fixtures & Devices - Classrooms / Gathering - Level 1	10	10	15-Jul-27	28-Jul-27
A4640	Install Specialties - Classrooms / Gathering - Level 1	10	10	29-Jul-27	11-Aug-27
A4650	Flood Ceilings - Classrooms / Gathering - Level 1	10	10	12-Aug-27	25-Aug-27
A4660	Final Paint - Classrooms / Gathering - Level 1	15	15	26-Aug-27	16-Sep-27
Cafe					
A5950	Framing & Blocking - Cafe - Level 1	5	5	12-Feb-27	19-Feb-27
A5960	In Wall Rough - Cafe - Level 1	15	15	22-Feb-27	12-Mar-27
A5980	OH Rough - Cafe - Level 1	15	15	01-Mar-27	19-Mar-27
A5970	In-Wall MEP & Blocking Inspections - Cafe - Level 1	1	1	15-Mar-27	15-Mar-27
A5990	Frame Ceilings & Access Panels - Cafe - Level 1	2	2	22-Mar-27	23-Mar-27
A6000	Hang, Tape & Sand Drywall Walls & Ceilings - Cafe - Level 1	10	10	24-Mar-27	06-Apr-27
A6010	Prime & 1st Coat Paint - Cafe - Level 1	5	5	07-Apr-27	13-Apr-27
A6020	Install Flooring - Cafe - Level 1	15	15	14-Apr-27	05-May-27



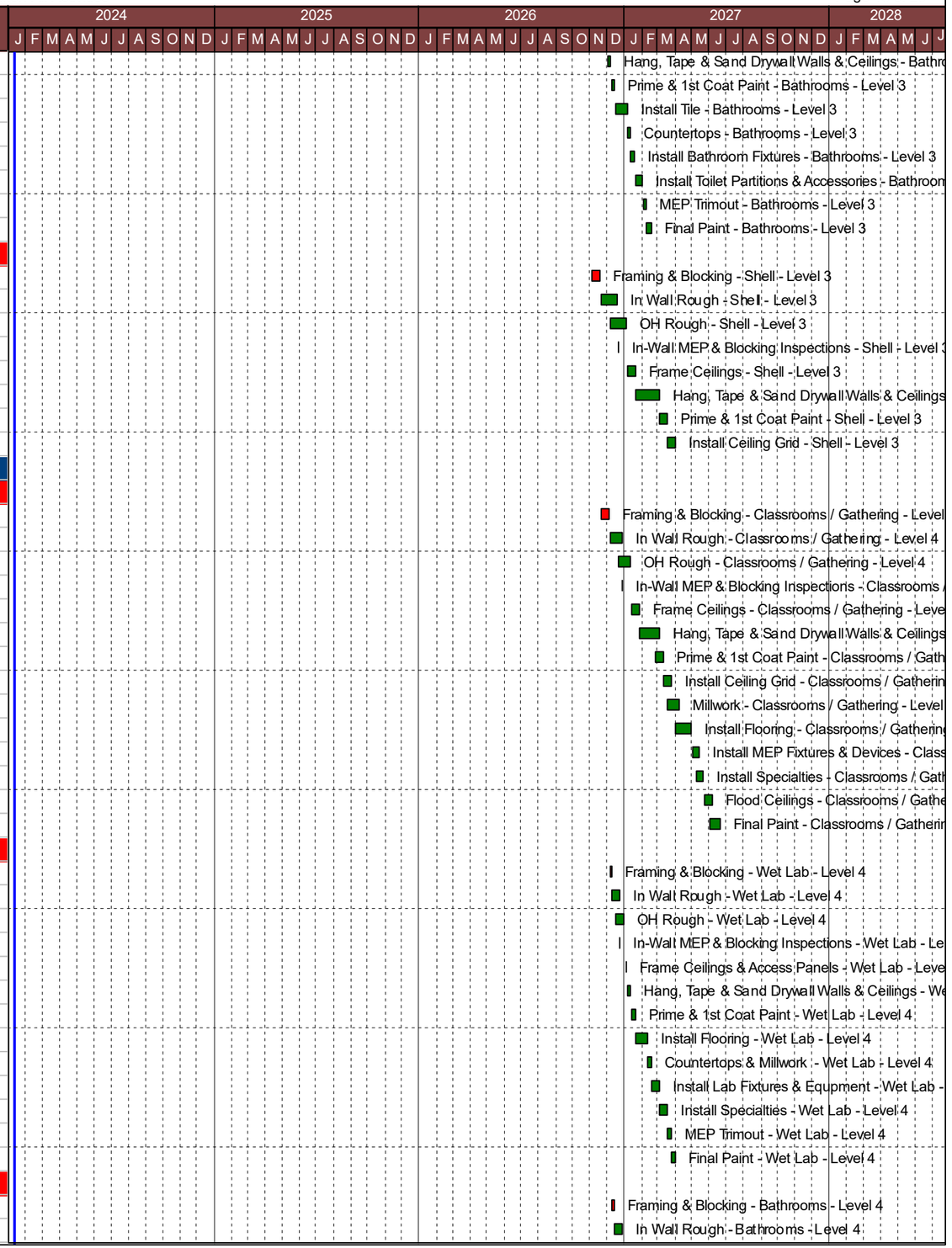
Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
A6030	Countertops & Millwork - Cafe - Level 1	5	5	06-May-27	12-May-27
A6040	Kitchen Equpment & Fixtures - Cafe - Level 1	10	10	13-May-27	26-May-27
A6050	Install Specialties - Cafe - Level 1	10	10	27-May-27	10-Jun-27
A6060	MEP Trimout - Cafe - Level 1	5	5	11-Jun-27	17-Jun-27
A6070	Final Paint - Cafe - Level 1	5	5	18-Jun-27	24-Jun-27
Bathrooms					
A3500	Framing & Blocking - Bathrooms - Level 1	3	3	17-Feb-27	19-Feb-27
A3510	In Wall Rough - Bathrooms - Level 1	10	10	22-Feb-27	05-Mar-27
A3520	OH Rough - Bathrooms - Level 1	10	10	01-Mar-27	12-Mar-27
A3650	In-Wall MEP & Blocking Inspections - Bathrooms - Level 1	1	1	08-Mar-27	08-Mar-27
A3640	Frame Ceilings & Access Panels - Bathrooms - Level 1	2	2	15-Mar-27	16-Mar-27
A3530	Hang, Tape & Sand Drywall Walls & Ceilings - Bathrooms - Level 1	5	5	17-Mar-27	23-Mar-27
A3550	Prime & 1st Coat Paint - Bathrooms - Level 1	5	5	24-Mar-27	30-Mar-27
A3560	Install Tile - Bathrooms - Level 1	15	15	31-Mar-27	21-Apr-27
A3880	Countertops - Bathrooms - Level 1	2	2	22-Apr-27	23-Apr-27
A3870	Install Bathroom Fixtures - Bathrooms - Level 1	5	5	26-Apr-27	30-Apr-27
A3570	Install Toilet Partitions & Accessories - Bathrooms - Level 1	10	10	03-May-27	14-May-27
A3580	MEP Trimout - Bathrooms - Level 1	5	5	17-May-27	21-May-27
A3590	Final Paint - Bathrooms - Level 1	5	5	24-May-27	28-May-27
Back of House					
A7760	Framing & Blocking - BOH - Level 1	5	5	12-Feb-27	19-Feb-27
A7770	In Wall Rough - BOH - Level 1	15	15	22-Feb-27	12-Mar-27
A7790	OH Rough - BOH - Level 1	15	15	01-Mar-27	19-Mar-27
A7780	In-Wall MEP & Blocking Inspections - BOH - Level 1	1	1	15-Mar-27	15-Mar-27
A7800	Frame Ceilings & Access Panels - BOH - Level 1	2	2	22-Mar-27	23-Mar-27
A7810	Hang, Tape & Sand Drywall Walls & Ceilings - BOH - Level 1	10	10	24-Mar-27	06-Apr-27
A7820	Prime & 1st Coat Paint - BOH - Level 1	5	5	07-Apr-27	13-Apr-27
A7830	Install Flooring - BOH - Level 1	15	15	14-Apr-27	05-May-27
A7840	Millwork - BOH - Level 1	5	5	06-May-27	12-May-27
A7860	Install Specialties - BOH - Level 1	10	10	13-May-27	26-May-27
A7870	MEP Trimout - BOH - Level 1	5	5	27-May-27	03-Jun-27
A7880	Final Paint - BOH - Level 1	5	5	04-Jun-27	10-Jun-27
Level 2					
Classrooms / Gathering					
A4670	Framing & Blocking - Classrooms / Gathering - Level 2	10	10	29-Sep-26	13-Oct-26
A4680	In Wall Rough - Classrooms / Gathering - Level 2	20	20	14-Oct-26	10-Nov-26
A4700	OH Rough - Classrooms / Gathering - Level 2	20	20	28-Oct-26	25-Nov-26
A4690	In-Wall MEP & Blocking Inspections - Classrooms / Gathering - Level 2	1	1	12-Nov-26	12-Nov-26
A4710	Frame Ceilings - Classrooms / Gathering - Level 2	10	10	27-Nov-26	10-Dec-26
A4720	Hang, Tape & Sand Drywall Walls & Ceilings - Classrooms / Gathering - Level 2	30	30	11-Dec-26	26-Jan-27
A4730	Prime & 1st Coat Paint - Classrooms / Gathering - Level 2	10	10	20-Jan-27	02-Feb-27
A4740	Install Ceiling Grid - Classrooms / Gathering - Level 2	10	10	03-Feb-27	17-Feb-27
A4750	Millwork - Classrooms / Gathering - Level 2	15	15	10-Feb-27	03-Mar-27
A4940	Install Flooring - Classrooms / Gathering - Level 2	20	20	25-Feb-27	24-Mar-27
A4760	Install MEP Fixtures & Devices - Classrooms / Gathering - Level 2	10	10	25-Mar-27	07-Apr-27
A4770	Install Specialties - Classrooms / Gathering - Level 2	10	10	01-Apr-27	14-Apr-27
A4780	Flood Ceilings - Classrooms / Gathering - Level 2	10	10	15-Apr-27	29-Apr-27
A4790	Final Paint - Classrooms / Gathering - Level 2	15	15	23-Apr-27	13-May-27
Bathrooms					
A3890	Framing & Blocking - Bathrooms - Level 2	3	3	08-Oct-26	13-Oct-26



Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
A3900	In Wall Rough - Bathrooms - Level 2	10	10	14-Oct-26	27-Oct-26
A3920	OH Rough - Bathrooms - Level 2	10	10	21-Oct-26	03-Nov-26
A3910	In-Wall MEP & Blocking Inspections - Bathrooms - Level 2	1	1	28-Oct-26	28-Oct-26
A3930	Frame Ceilings & Access Panels - Bathrooms - Level 2	2	2	04-Nov-26	05-Nov-26
A3940	Hang, Tape & Sand Drywall Walls & Ceilings - Bathrooms - Level 2	5	5	06-Nov-26	13-Nov-26
A3950	Prime & 1st Coat Paint - Bathrooms - Level 2	5	5	16-Nov-26	20-Nov-26
A3960	Install Tile - Bathrooms - Level 2	15	15	23-Nov-26	14-Dec-26
A3970	Countertops - Bathrooms - Level 2	2	2	15-Dec-26	16-Dec-26
A3980	Install Bathroom Fixtures - Bathrooms - Level 2	5	5	17-Dec-26	23-Dec-26
A3990	Install Toilet Partitions & Accessories - Bathrooms - Level 2	10	10	24-Dec-26	08-Jan-27
A4000	MEP Trimout - Bathrooms - Level 2	5	5	11-Jan-27	15-Jan-27
A4010	Final Paint - Bathrooms - Level 2	5	5	19-Jan-27	25-Jan-27
Electrical Room					
A8090	Fitout Electrical Room & Equipment	140	140	29-Sep-26	22-Apr-27
Level 3					
Classrooms / Gathering					
A4800	Framing & Blocking - Classrooms / Gathering - Level 3	10	10	14-Oct-26	27-Oct-26
A4810	In Wall Rough - Classrooms / Gathering - Level 3	20	20	28-Oct-26	25-Nov-26
A4830	OH Rough - Classrooms / Gathering - Level 3	20	20	12-Nov-26	10-Dec-26
A4820	In-Wall MEP & Blocking Inspections - Classrooms / Gathering - Level 3	1	1	27-Nov-26	27-Nov-26
A4840	Frame Ceilings - Classrooms / Gathering - Level 3	10	10	11-Dec-26	24-Dec-26
A4850	Hang, Tape & Sand Drywall Walls & Ceilings - Classrooms / Gathering - Level 3	30	30	28-Dec-26	09-Feb-27
A4860	Prime & 1st Coat Paint - Classrooms / Gathering - Level 3	10	10	03-Feb-27	17-Feb-27
A4870	Install Ceiling Grid - Classrooms / Gathering - Level 3	10	10	18-Feb-27	03-Mar-27
A4880	Millwork - Classrooms / Gathering - Level 3	15	15	25-Feb-27	17-Mar-27
A4930	Install Flooring - Classrooms / Gathering - Level 3	20	20	11-Mar-27	07-Apr-27
A4890	Install MEP Fixtures & Devices - Classrooms / Gathering - Level 3	10	10	08-Apr-27	22-Apr-27
A4900	Install Specialties - Classrooms / Gathering - Level 3	10	10	15-Apr-27	29-Apr-27
A4910	Flood Ceilings - Classrooms / Gathering - Level 3	10	10	30-Apr-27	13-May-27
A4920	Final Paint - Classrooms / Gathering - Level 3	15	15	07-May-27	27-May-27
Wet Lab					
A5690	Framing & Blocking - Wet Lab - Level 3	3	3	28-Oct-26	30-Oct-26
A5700	In Wall Rough - Wet Lab - Level 3	10	10	02-Nov-26	16-Nov-26
A5720	OH Rough - Wet Lab - Level 3	10	10	09-Nov-26	23-Nov-26
A5710	In-Wall MEP & Blocking Inspections - Wet Lab - Level 3	1	1	17-Nov-26	17-Nov-26
A5730	Frame Ceilings & Access Panels - Wet Lab - Level 3	2	2	24-Nov-26	25-Nov-26
A5740	Hang, Tape & Sand Drywall Walls & Ceilings - Wet Lab - Level 3	5	5	27-Nov-26	03-Dec-26
A5750	Prime & 1st Coat Paint - Wet Lab - Level 3	5	5	04-Dec-26	10-Dec-26
A5760	Install Flooring - Wet Lab - Level 3	15	15	11-Dec-26	04-Jan-27
A5770	Countertops & Millwork - Wet Lab - Level 3	5	5	05-Jan-27	11-Jan-27
A5780	Install Lab Fixtures & Equpment - Wet Lab - Level 3	10	10	12-Jan-27	26-Jan-27
A5790	Install Specialties - Wet Lab - Level 3	10	10	27-Jan-27	09-Feb-27
A5800	MEP Trimout - Wet Lab - Level 3	5	5	10-Feb-27	17-Feb-27
A5810	Final Paint - Wet Lab - Level 3	5	5	18-Feb-27	24-Feb-27
Bathrooms					
A4020	Framing & Blocking - Bathrooms - Level 3	3	3	02-Nov-26	04-Nov-26
A4030	In Wall Rough - Bathrooms - Level 3	10	10	05-Nov-26	19-Nov-26
A4050	OH Rough - Bathrooms - Level 3	10	10	13-Nov-26	27-Nov-26
A4040	In-Wall MEP & Blocking Inspections - Bathrooms - Level 3	1	1	20-Nov-26	20-Nov-26
A4060	Frame Ceilings & Access Panels - Bathrooms - Level 3	2	2	30-Nov-26	01-Dec-26



Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
A4070	Hang, Tape & Sand Drywall Walls & Ceilings - Bathrooms - Level 3	5	5	02-Dec-26	08-Dec-26
A4080	Prime & 1st Coat Paint - Bathrooms - Level 3	5	5	09-Dec-26	15-Dec-26
A4090	Install Tile - Bathrooms - Level 3	15	15	16-Dec-26	07-Jan-27
A4100	Countertops - Bathrooms - Level 3	2	2	08-Jan-27	11-Jan-27
A4110	Install Bathroom Fixtures - Bathrooms - Level 3	5	5	12-Jan-27	19-Jan-27
A4120	Install Toilet Partitions & Accessories - Bathrooms - Level 3	10	10	20-Jan-27	02-Feb-27
A4130	MEP Trimout - Bathrooms - Level 3	5	5	03-Feb-27	09-Feb-27
A4140	Final Paint - Bathrooms - Level 3	5	5	10-Feb-27	17-Feb-27
Shell					
A5370	Framing & Blocking - Shell - Level 3	10	10	05-Nov-26	19-Nov-26
A5380	In Wall Rough - Shell - Level 3	20	20	20-Nov-26	18-Dec-26
A5400	OH Rough - Shell - Level 3	20	20	07-Dec-26	05-Jan-27
A5390	In-Wall MEP & Blocking Inspections - Shell - Level 3	1	1	21-Dec-26	21-Dec-26
A5410	Frame Ceilings - Shell - Level 3	10	10	06-Jan-27	20-Jan-27
A5420	Hang, Tape & Sand Drywall Walls & Ceilings - Shell - Level 3	30	30	21-Jan-27	04-Mar-27
A5430	Prime & 1st Coat Paint - Shell - Level 3	10	10	05-Mar-27	18-Mar-27
A5440	Install Ceiling Grid - Shell - Level 3	10	10	19-Mar-27	01-Apr-27
Level 4					
Classrooms / Gathering					
A4950	Framing & Blocking - Classrooms / Gathering - Level 4	10	10	20-Nov-26	04-Dec-26
A4960	In Wall Rough - Classrooms / Gathering - Level 4	15	15	07-Dec-26	28-Dec-26
A4980	OH Rough - Classrooms / Gathering - Level 4	15	15	21-Dec-26	12-Jan-27
A4970	In-Wall MEP & Blocking Inspections - Classrooms / Gathering - Level 4	1	1	29-Dec-26	29-Dec-26
A4990	Frame Ceilings - Classrooms / Gathering - Level 4	10	10	13-Jan-27	27-Jan-27
A5000	Hang, Tape & Sand Drywall Walls & Ceilings - Classrooms / Gathering - Level 4	25	25	28-Jan-27	04-Mar-27
A5010	Prime & 1st Coat Paint - Classrooms / Gathering - Level 4	10	10	26-Feb-27	11-Mar-27
A5020	Install Ceiling Grid - Classrooms / Gathering - Level 4	10	10	12-Mar-27	25-Mar-27
A5030	Millwork - Classrooms / Gathering - Level 4	15	15	19-Mar-27	08-Apr-27
A5040	Install Flooring - Classrooms / Gathering - Level 4	20	20	02-Apr-27	30-Apr-27
A5050	Install MEP Fixtures & Devices - Classrooms / Gathering - Level 4	10	10	03-May-27	14-May-27
A5060	Install Specialties - Classrooms / Gathering - Level 4	10	10	10-May-27	21-May-27
A5070	Flood Ceilings - Classrooms / Gathering - Level 4	10	10	24-May-27	07-Jun-27
A5080	Final Paint - Classrooms / Gathering - Level 4	15	15	01-Jun-27	21-Jun-27
Wet Lab					
A5820	Framing & Blocking - Wet Lab - Level 4	3	3	07-Dec-26	09-Dec-26
A5830	In Wall Rough - Wet Lab - Level 4	10	10	10-Dec-26	23-Dec-26
A5850	OH Rough - Wet Lab - Level 4	10	10	17-Dec-26	31-Dec-26
A5840	In-Wall MEP & Blocking Inspections - Wet Lab - Level 4	1	1	24-Dec-26	24-Dec-26
A5860	Frame Ceilings & Access Panels - Wet Lab - Level 4	2	2	04-Jan-27	05-Jan-27
A5870	Hang, Tape & Sand Drywall Walls & Ceilings - Wet Lab - Level 4	5	5	06-Jan-27	12-Jan-27
A5880	Prime & 1st Coat Paint - Wet Lab - Level 4	5	5	13-Jan-27	20-Jan-27
A5890	Install Flooring - Wet Lab - Level 4	15	15	21-Jan-27	10-Feb-27
A5900	Countertops & Millwork - Wet Lab - Level 4	5	5	11-Feb-27	18-Feb-27
A5910	Install Lab Fixtures & Equpment - Wet Lab - Level 4	10	10	19-Feb-27	04-Mar-27
A5920	Install Specialties - Wet Lab - Level 4	10	10	05-Mar-27	18-Mar-27
A5930	MEP Trimout - Wet Lab - Level 4	5	5	19-Mar-27	25-Mar-27
A5940	Final Paint - Wet Lab - Level 4	5	5	26-Mar-27	01-Apr-27
Bathrooms					
A4150	Framing & Blocking - Bathrooms - Level 4	3	3	10-Dec-26	14-Dec-26
A4160	In Wall Rough - Bathrooms - Level 4	10	10	15-Dec-26	29-Dec-26

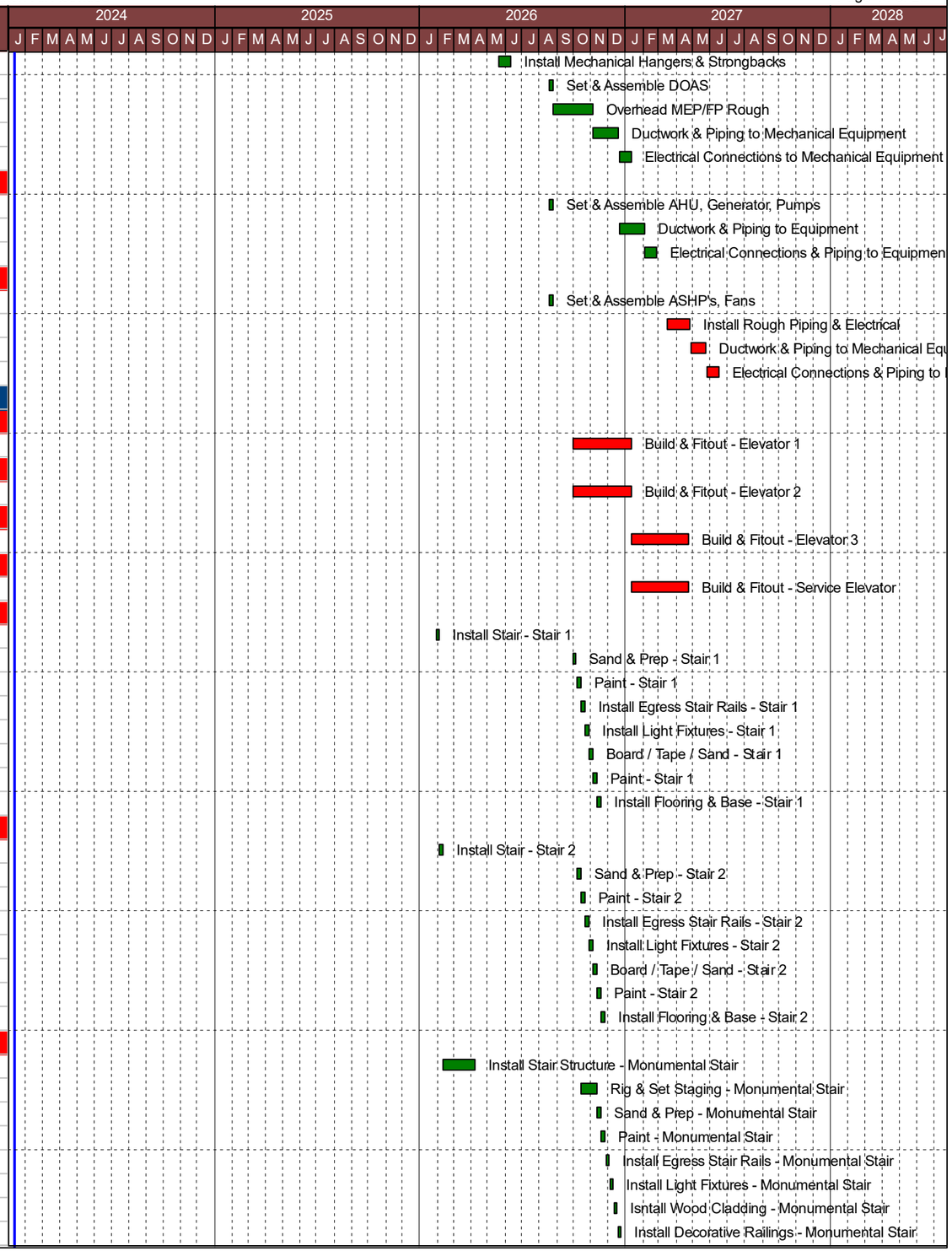


Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
A4180	OH Rough - Bathrooms - Level 4	10	10	22-Dec-26	06-Jan-27
A4170	In-Wall MEP & Blocking Inspections - Bathrooms - Level 4	1	1	30-Dec-26	30-Dec-26
A4190	Frame Ceilings & Access Panels - Bathrooms - Level 4	2	2	07-Jan-27	08-Jan-27
A4200	Hang, Tape & Sand Drywall Walls & Ceilings - Bathrooms - Level 4	5	5	11-Jan-27	15-Jan-27
A4210	Prime & 1st Coat Paint - Bathrooms - Level 4	5	5	19-Jan-27	25-Jan-27
A4220	Install Tile - Bathrooms - Level 4	15	15	26-Jan-27	16-Feb-27
A4230	Countertops - Bathrooms - Level 4	2	2	17-Feb-27	18-Feb-27
A4240	Install Bathroom Fixtures - Bathrooms - Level 4	5	5	19-Feb-27	25-Feb-27
A4250	Install Toilet Partitions & Accessories - Bathrooms - Level 4	10	10	26-Feb-27	11-Mar-27
A4260	MEP Trimout - Bathrooms - Level 4	5	5	12-Mar-27	18-Mar-27
A4270	Final Paint - Bathrooms - Level 4	5	5	19-Mar-27	25-Mar-27
Shell					
A5450	Framing & Blocking - Shell - Level 4	10	10	15-Dec-26	29-Dec-26
A5460	In Wall Rough - Shell - Level 4	20	20	30-Dec-26	28-Jan-27
A5480	OH Rough - Shell - Level 4	20	20	14-Jan-27	11-Feb-27
A5470	In-Wall MEP & Blocking Inspections - Shell - Level 4	1	1	29-Jan-27	29-Jan-27
A5490	Frame Ceilings - Shell - Level 4	10	10	12-Feb-27	26-Feb-27
A5500	Hang, Tape & Sand Drywall Walls & Ceilings - Shell - Level 4	30	30	01-Mar-27	09-Apr-27
A5510	Prime & 1st Coat Paint - Shell - Level 4	10	10	12-Apr-27	26-Apr-27
A5520	Install Ceiling Grid - Shell - Level 4	10	10	27-Apr-27	10-May-27
Level 5					
Classrooms / Gathering					
A5090	Framing & Blocking - Classrooms / Gathering - Level 5	10	10	30-Dec-26	13-Jan-27
A5100	In Wall Rough - Classrooms / Gathering - Level 5	15	15	14-Jan-27	04-Feb-27
A5120	OH Rough - Classrooms / Gathering - Level 5	15	15	29-Jan-27	19-Feb-27
A5110	In-Wall MEP & Blocking Inspections - Classrooms / Gathering - Level 5	1	1	05-Feb-27	05-Feb-27
A5130	Frame Ceilings - Classrooms / Gathering - Level 5	10	10	12-Feb-27	26-Feb-27
A5140	Hang, Tape & Sand Drywall Walls & Ceilings - Classrooms / Gathering - Level 5	25	25	22-Feb-27	26-Mar-27
A5150	Prime & 1st Coat Paint - Classrooms / Gathering - Level 5	10	10	22-Mar-27	02-Apr-27
A5160	Install Ceiling Grid - Classrooms / Gathering - Level 5	10	10	05-Apr-27	16-Apr-27
A5170	Millwork - Classrooms / Gathering - Level 5	15	15	12-Apr-27	03-May-27
A5180	Install Flooring - Classrooms / Gathering - Level 5	20	20	20-Apr-27	17-May-27
A5190	Install MEP Fixtures & Devices - Classrooms / Gathering - Level 5	10	10	11-May-27	24-May-27
A5200	Install Specialties - Classrooms / Gathering - Level 5	10	10	18-May-27	01-Jun-27
A5210	Flood Ceilings - Classrooms / Gathering - Level 5	10	10	25-May-27	08-Jun-27
A5220	Final Paint - Classrooms / Gathering - Level 5	15	15	02-Jun-27	22-Jun-27
Shell					
A5530	Framing & Blocking - Shell - Level 5	10	10	30-Dec-26	13-Jan-27
A5540	In Wall Rough - Shell - Level 5	20	20	14-Jan-27	11-Feb-27
A5560	OH Rough - Shell - Level 5	20	20	29-Jan-27	26-Feb-27
A5550	In-Wall MEP & Blocking Inspections - Shell - Level 5	1	1	12-Feb-27	12-Feb-27
A5570	Frame Ceilings - Shell - Level 5	10	10	01-Mar-27	12-Mar-27
A5580	Hang, Tape & Sand Drywall Walls & Ceilings - Shell - Level 5	30	30	15-Mar-27	26-Apr-27
A5590	Prime & 1st Coat Paint - Shell - Level 5	10	10	27-Apr-27	10-May-27
A5600	Install Ceiling Grid - Shell - Level 5	10	10	11-May-27	24-May-27
Bathrooms					
A4280	Framing & Blocking - Bathrooms - Level 5	3	3	11-Jan-27	13-Jan-27
A4290	In Wall Rough - Bathrooms - Level 5	10	10	14-Jan-27	28-Jan-27
A4310	OH Rough - Bathrooms - Level 5	10	10	22-Jan-27	04-Feb-27
A4300	In-Wall MEP & Blocking Inspections - Bathrooms - Level 5	1	1	29-Jan-27	29-Jan-27

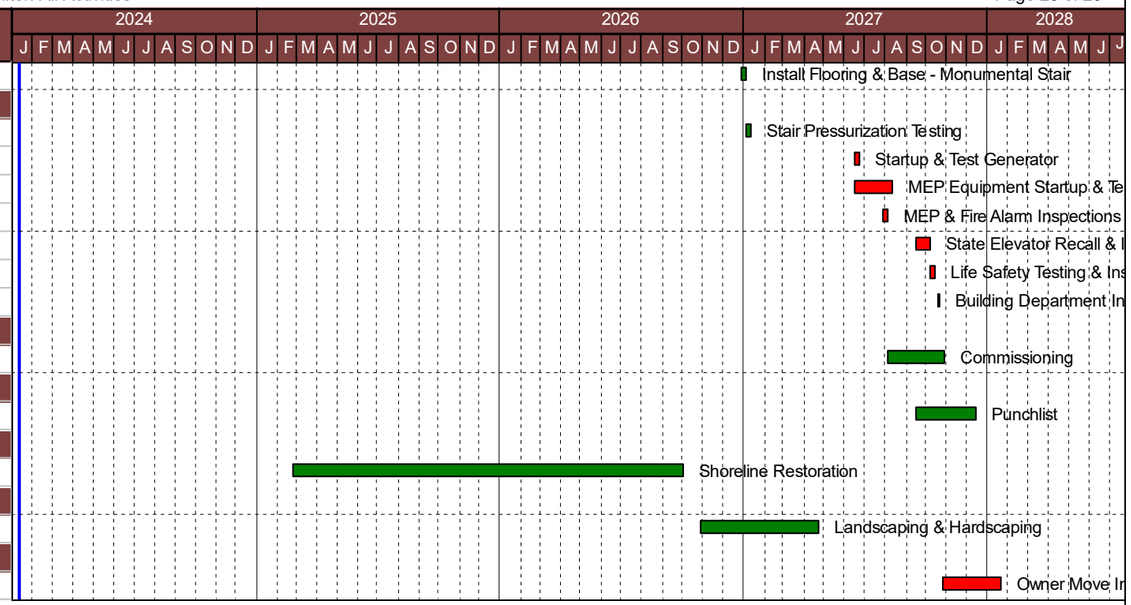


Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
A4320	Frame Ceilings & Access Panels - Bathrooms - Level 5	2	2	05-Feb-27	08-Feb-27
A4330	Hang, Tape & Sand Drywall Walls & Ceilings - Bathrooms - Level 5	5	5	09-Feb-27	16-Feb-27
A4340	Prime & 1st Coat Paint - Bathrooms - Level 5	5	5	17-Feb-27	23-Feb-27
A4350	Install Tile - Bathrooms - Level 5	15	15	24-Feb-27	16-Mar-27
A4360	Countertops - Bathrooms - Level 5	2	2	17-Mar-27	18-Mar-27
A4370	Install Bathroom Fixtures - Bathrooms - Level 5	5	5	19-Mar-27	25-Mar-27
A4380	Install Toilet Partitions & Accessories - Bathrooms - Level 5	10	10	26-Mar-27	08-Apr-27
A4390	MEP Trimout - Bathrooms - Level 5	5	5	09-Apr-27	15-Apr-27
A4400	Final Paint - Bathrooms - Level 5	5	5	16-Apr-27	23-Apr-27
Level 6					
Classrooms / Gathering					
A5230	Framing & Blocking - Classrooms / Gathering - Level 6	10	10	14-Jan-27	28-Jan-27
A5240	In Wall Rough - Classrooms / Gathering - Level 6	15	15	29-Jan-27	19-Feb-27
A5260	OH Rough - Classrooms / Gathering - Level 6	15	15	12-Feb-27	05-Mar-27
A5250	In-Wall MEP & Blocking Inspections - Classrooms / Gathering - Level 6	1	1	22-Feb-27	22-Feb-27
A5270	Frame Ceilings - Classrooms / Gathering - Level 6	10	10	01-Mar-27	12-Mar-27
A5280	Hang, Tape & Sand Drywall Walls & Ceilings - Classrooms / Gathering - Level 6	25	25	08-Mar-27	09-Apr-27
A5290	Prime & 1st Coat Paint - Classrooms / Gathering - Level 6	10	10	05-Apr-27	16-Apr-27
A5300	Install Ceiling Grid - Classrooms / Gathering - Level 6	10	10	12-Apr-27	26-Apr-27
A5310	Millwork - Classrooms / Gathering - Level 6	15	15	20-Apr-27	10-May-27
A5320	Install Flooring - Classrooms / Gathering - Level 6	20	20	04-May-27	01-Jun-27
A5330	Install MEP Fixtures & Devices - Classrooms / Gathering - Level 6	10	10	25-May-27	08-Jun-27
A5340	Install Specialties - Classrooms / Gathering - Level 6	10	10	02-Jun-27	15-Jun-27
A5350	Flood Ceilings - Classrooms / Gathering - Level 6	10	10	09-Jun-27	22-Jun-27
A5360	Final Paint - Classrooms / Gathering - Level 6	15	15	16-Jun-27	07-Jul-27
Shell					
A5610	Framing & Blocking - Shell - Level 6	10	10	14-Jan-27	28-Jan-27
A5620	In Wall Rough - Shell - Level 6	20	20	29-Jan-27	26-Feb-27
A5640	OH Rough - Shell - Level 6	20	20	12-Feb-27	12-Mar-27
A5630	In-Wall MEP & Blocking Inspections - Shell - Level 6	1	1	01-Mar-27	01-Mar-27
A5650	Frame Ceilings - Shell - Level 6	10	10	15-Mar-27	26-Mar-27
A5660	Hang, Tape & Sand Drywall Walls & Ceilings - Shell - Level 6	30	30	29-Mar-27	10-May-27
A5670	Prime & 1st Coat Paint - Shell - Level 6	10	10	11-May-27	24-May-27
A5680	Install Ceiling Grid - Shell - Level 6	10	10	25-May-27	08-Jun-27
Bathrooms					
A4410	Framing & Blocking - Bathrooms - Level 6	3	3	26-Jan-27	28-Jan-27
A4420	In Wall Rough - Bathrooms - Level 6	10	10	29-Jan-27	11-Feb-27
A4440	OH Rough - Bathrooms - Level 6	10	10	05-Feb-27	19-Feb-27
A4430	In-Wall MEP & Blocking Inspections - Bathrooms - Level 6	1	1	12-Feb-27	12-Feb-27
A4450	Frame Ceilings & Access Panels - Bathrooms - Level 6	2	2	22-Feb-27	23-Feb-27
A4460	Hang, Tape & Sand Drywall Walls & Ceilings - Bathrooms - Level 6	5	5	24-Feb-27	02-Mar-27
A4470	Prime & 1st Coat Paint - Bathrooms - Level 6	5	5	03-Mar-27	09-Mar-27
A4480	Install Tile - Bathrooms - Level 6	15	15	10-Mar-27	30-Mar-27
A4490	Countertops - Bathrooms - Level 6	2	2	31-Mar-27	01-Apr-27
A4500	Install Bathroom Fixtures - Bathrooms - Level 6	5	5	02-Apr-27	08-Apr-27
A4510	Install Toilet Partitions & Accessories - Bathrooms - Level 6	10	10	09-Apr-27	23-Apr-27
A4520	MEP Trimout - Bathrooms - Level 6	5	5	26-Apr-27	30-Apr-27
A4530	Final Paint - Bathrooms - Level 6	5	5	03-May-27	07-May-27
Level 7 / Penthouse					
Mechanical					

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
A7970	Install Mechanical Hangers & Strongbacks	15	15	20-May-26	10-Jun-26
A7980	Set & Assemble DOAS	5	5	18-Aug-26	24-Aug-26
A7990	Overhead MEP/FP Rough	50	50	25-Aug-26	04-Nov-26
A8000	Ductwork & Piping to Mechanical Equipment	30	30	05-Nov-26	18-Dec-26
A8010	Electrical Connections to Mechanical Equipment	15	15	21-Dec-26	12-Jan-27
Mechanical Well					
A8020	Set & Assemble AHU, Generator, Pumps	5	5	18-Aug-26	24-Aug-26
A8030	Ductwork & Piping to Equipment	30	30	21-Dec-26	03-Feb-27
A8040	Electrical Connections & Piping to Equipment	15	15	04-Feb-27	25-Feb-27
ASHP Well					
A8050	Set & Assemble ASHP's, Fans	5	5	18-Aug-26	24-Aug-26
A8060	Install Rough Piping & Electrical	30	30	15-Mar-27	26-Apr-27
A8070	Ductwork & Piping to Mechanical Equipment	20	20	27-Apr-27	24-May-27
A8080	Electrical Connections & Piping to Equipment	15	15	25-May-27	15-Jun-27
Vertical Transportation					
Elevator 1					
A6080	Build & Fitout - Elevator 1	70	70	29-Sep-26	11-Jan-27
Elevator 2					
A6090	Build & Fitout - Elevator 2	70	70	29-Sep-26	11-Jan-27
Elevator 3					
A6100	Build & Fitout - Elevator 3	70	70	12-Jan-27	22-Apr-27
Service Elevator					
A6110	Build & Fitout - Service Elevator	70	70	12-Jan-27	22-Apr-27
Stair 1					
A6120	Install Stair - Stair 1	5	5	29-Jan-26	04-Feb-26
A6130	Sand & Prep - Stair 1	5	5	29-Sep-26	05-Oct-26
A6140	Paint - Stair 1	5	5	06-Oct-26	13-Oct-26
A6150	Install Egress Stair Rails - Stair 1	5	5	14-Oct-26	20-Oct-26
A6160	Install Light Fixtures - Stair 1	5	5	21-Oct-26	27-Oct-26
A6170	Board / Tape / Sand - Stair 1	5	5	28-Oct-26	03-Nov-26
A6180	Paint - Stair 1	5	5	04-Nov-26	10-Nov-26
A6190	Install Flooring & Base - Stair 1	5	5	12-Nov-26	18-Nov-26
Stair 2					
A6200	Install Stair - Stair 2	5	5	05-Feb-26	11-Feb-26
A6210	Sand & Prep - Stair 2	5	5	06-Oct-26	13-Oct-26
A6220	Paint - Stair 2	5	5	14-Oct-26	20-Oct-26
A6230	Install Egress Stair Rails - Stair 2	5	5	21-Oct-26	27-Oct-26
A6240	Install Light Fixtures - Stair 2	5	5	28-Oct-26	03-Nov-26
A6250	Board / Tape / Sand - Stair 2	5	5	04-Nov-26	10-Nov-26
A6260	Paint - Stair 2	5	5	12-Nov-26	18-Nov-26
A6270	Install Flooring & Base - Stair 2	5	5	19-Nov-26	25-Nov-26
Monumental Stairs					
A6280	Install Stair Structure - Monumental Stair	40	40	12-Feb-26	09-Apr-26
A6360	Rig & Set Staging - Monumental Stair	20	20	14-Oct-26	10-Nov-26
A6290	Sand & Prep - Monumental Stair	5	5	12-Nov-26	18-Nov-26
A6300	Paint - Monumental Stair	5	5	19-Nov-26	25-Nov-26
A6310	Install Egress Stair Rails - Monumental Stair	5	5	27-Nov-26	03-Dec-26
A6320	Install Light Fixtures - Monumental Stair	5	5	04-Dec-26	10-Dec-26
A6330	Isntall Wood Cladding - Monumental Stair	5	5	11-Dec-26	17-Dec-26
A6340	Install Decorative Railings - Monumental Stair	5	5	18-Dec-26	24-Dec-26



Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
A6350	Install Flooring & Base - Monumental Stair	5	5	28-Dec-26	04-Jan-27
Testing & Inspections					
A8140	Stair Pressurization Testing	5	5	05-Jan-27	11-Jan-27
A8160	Startup & Test Generator	5	5	16-Jun-27	22-Jun-27
A8320	MEP Equipment Startup & Testing	40	40	16-Jun-27	11-Aug-27
A8120	MEP & Fire Alarm Inspections	5	5	29-Jul-27	04-Aug-27
A8110	State Elevator Recall & Inspections	15	15	17-Sep-27	07-Oct-27
A8130	Life Safety Testing & Inspections	5	5	08-Oct-27	15-Oct-27
A8150	Building Department Inspections	5	5	18-Oct-27	22-Oct-27
Commissioning					
A7890	Commissioning	60	60	05-Aug-27	29-Oct-27
Punchlist					
A00652	Punchlist	60	60	17-Sep-27	14-Dec-27
Shoreline Restoration					
A8870	Shoreline Restoration	402	402	26-Feb-25	01-Oct-26
Landscaping & Site Finishes					
A8180	Landscaping & Hardscaping	120	120	28-Oct-26	22-Apr-27
Owner Move In					
A9070	Owner Move In	60	60	25-Oct-27	21-Jan-28



The Roux Institute
Northeastern University

Community Advisory Group (CAG)
The Roux Institute at Northeastern University
OCTOBER 30, 2023

Participants

CAG participants:
Tiffanie Bentley, Interim President, SMCC
Sarah Boltz, Teacher, Presumpscot Elementary School
Eamonn Dundon, Director of Advocacy, Portland Regional Chamber of Commerce
Jason Judd, Executive Director, Educate Maine
Cherie Juniwiecz, East Deering resident
Cheryl Leeman, East Deering Neighborhood Association
Sara Nadeau, Parent, Presumpscot Elementary School
Bill Needelman, Waterfront Coordinator, City of Portland, Maine
Jack Phillips, Executive Director, Portland Parks Conservancy
Angie Taylor, Principal, Presumpscot Elementary School
Mike Tremblay, Director of Transit Development, Greater Portland Metro
Steve Von Vogt, East Deering Neighborhood for Responsible Development

Northeastern University participants and guest speakers:
Margaret Angell, Head of Partnerships & Strategic Initiatives, The Roux Institute
Alicia Jalbert, Manager of Community Partnerships, The Roux Institute
Joe Regan, Director, City & Community Engagement, Northeastern University
Sam Reiche, Head of Operations & Real Estate, IDEALS
John Tobin, Vice President, City & Community Engagement, Northeastern University
Chris Mallett, Chief Administrative Officer, Roux Institute and Senior Vice Chancellor
Chrystina Russell, Managing Director, Strategic Initiatives, The Roux Institute
Mary Costigan, Attorney at Bernstein Shur Sawyer & Nelson
Timothy Mansfield, AIA, Principal Architect.

Meeting Recap & Notes

Margaret Angell began the meeting with welcome remarks and noted that three CAG members were not available to attend the first meeting.

- Emma Bond, Portland Bike/Ped Advocacy Committee
- Adilah Mohammed, The Third Place
- Aaron Townsend, Deputy Superintendent, Portland Public School

A moment of silence/reflection was held for those impacted by the Lewiston shootings. This was followed by a quick round of introductions where participants introduced themselves, the organization/community they represented, and what they hoped to achieve/learn from the meeting.

Margaret thanked those who helped her and the Roux team plan and organize this inaugural CAG meeting. Participants were welcome to offer comments feedback or ask further questions at any point during the meeting.

There were three key topics of discussion. It was acknowledged that not everyone in the room had the same level of knowledge or engagement with the Roux Institute, so to start, it was essential to provide an overview of Northeastern University's work and mission in the Portland area. This would be followed by an overview of the development plan for the new campus. Finally, the meeting's third topic is to discuss the CAG's role and the group's draft charter.

Overview of the Roux Institute

Presented by Margaret Angell and Alicia Jalbert

Margaret Angell delivered an overview of the Roux Institute, which was established in 2020 as a campus within Northeastern University's global network. The Roux Institute's primary purpose is to act as an "opportunity engine" within Maine through graduate education in high-growth fields (including generous scholarships for master's degrees and certificates), research, and entrepreneurship programs. Her presentation underscored the significant growth in the student population, the number of start-up companies launched in the Roux programs, and the expansion of business and industry partnerships at the Roux over the past three years. Margaret emphasized that Northeastern's pedagogy revolves around experiential education, illustrating this approach with an example of Roux students collaborating with L.L. Bean employees to address a retail analytics challenge faced by the company. She discussed the expected growth of the Institute, and after concluding her presentation, Margaret welcomed questions from the CAG, although none were posed at that moment.

Alicia Jalbert then continued the presentation by providing an overview of the Roux Institute's Community Partnerships. She detailed the University's commitment to leveraging its unique strengths across various core disciplines and assets to foster community partnerships aligned with Maine's 10-year Economic Plan. Alicia highlighted several examples of organizations that collaborate with Northeastern, including Educate Maine, Jobs for Maine Graduates, Knox County Health Clinic, Maine Math and Science Alliance, Portland Community Squash, Portland Public Schools, and The Third Place. Over the past year, the University has engaged with approximately 200 K-12 students, primarily from local and regional schools. Alicia spotlighted the Girls Who Code Camp as an illustration of the Roux's efforts to engage young students and inspire future careers in STEM (Science, Technology, Engineering, and Mathematics). She also informed the CAG about the Maine Black Professionals Network, which regularly hosts quarterly gatherings at the Roux Institute. These gatherings serve as opportunities for networking and learning about the various options available, such as graduate programming, partnership opportunities, residencies, and more.

Overview of the campus development plan and status update

Presentation by Tim Mansfield, and Sam Reiche

Tim Mansfield gave an overview of the proposed development at the former B&M site in East Deering, the site for the Roux permanent campus. This presentation included detailed renderings of Phase 1 of the site plan. Tim started his presentation by noting that the campus encompasses approximately 13 acres on a peninsula, with about 82% of the land covered by tarmac and buildings at purchase. The overarching objective is to revamp the area, restoring it to a more natural state with open spaces. The ongoing Bean Building restoration project includes the removal of old warehouse structures and rebuilding in the same footprint, focusing on creating a conservation exhibit. Additionally, plans for the waterfront area involve enhancing the pier and floating dock to expand waterfront activities.

The Bean Building's primary purpose will be supporting entrepreneurs, accelerators, and young companies, fostering collaboration with the academic building. This collaborative approach aligns with the broader educational ethos, emphasizing hands-on experience and practical learning. The academic building will be designed linearly to maximize the impact of its location, creating a keen sense of arrival on the peninsula. Lastly, a coastal pathway and bike path traverse the campus, enhancing accessibility and connectivity.
The Learning, Research & Collaboration Building (LRC (Learning, Research & Collaboration)) is designed to offer impressive views and connections while embracing the interior of the campus. It is situated right in the heart of the campus, referred to as "the round." The site's layout includes the main pedestrian pathway, offering access to the waterfront on the west side and a parking structure with childcare facilities on the north side. The campus will use stone, granite, brick, copper, and other materials that have traditionally defined the city. Special attention will be given to the granite detailing, inspired by the unique Bailey Island Bridge, one of only two such bridges in the world, crafted from Maine granite. The Bean Building is undergoing restoration and reintegration, focusing on blending the old and the new seamlessly.

The campus's landscaping is being meticulously designed by the talented landscape architect, Steven Stimpson, who understands the region's natural elements, including indigenous species that reflect the coastal environment. Sustainability is a core focus, with the West Wing planned to be a fully mass-timbered building. Mass timber involves using engineered, renewable wood, such as cross-laminated timber (CLT), for structural components like columns, beams, and decking, making it a sustainable choice for the future.
The pier's reconstruction in its existing footprint will incorporate elements that pay homage to the codfish building's history. The pier is envisioned as a flexible community gathering space, accommodating activities like kayaking and potential water taxis, reinvigorating engagement with the waterfront. The campus's new bike and footpath will encircle the entire area, bringing people back to the water's edge providing a healthy and scenic way to explore the peninsula.

Sam Reiche then provided a quick update on the permitting progress for the site. Over the past two years, and even more, we have been dedicated to zoning, which was successfully completed in February 2023. This zoning approval empowers us to proceed with the following stages. Presently, we are primarily focused on our site plan, which is nearly finalized. Sam informed the CAG that he and the Roux team have recently held a neighborhood forum with a presentation quite similar to this one, ensuring that the neighborhood and community stays informed about our progress. The aim is to maintain transparency and keep people well-informed. In the coming weeks, they plan to submit the site plan application to the city, and a formal neighborhood meeting, an essential part of the process, will follow this. During this neighborhood meeting, we anticipate more detailed questions, ideas, and discussions. This process will eventually lead to the "plan workshops," which could be a single session or several. These workshops are akin to what the University went through during the zoning process. This comprehensive public engagement aims to align everyone's expectations and incorporates aspects like historic preservation, environmental considerations, and traffic patterns.

It is crucial to note that the CAG meeting is separate from the site plan process. Still, it is something the Roux engaged in collaboratively with the city and the community. There are two ways for the CAG members to stay up to date. First, IDEALS and Roux host Neighborhood Forums at least every quarter (in 2023 it has been every two months). These forums allows us to maintain close communication with the community on campus development activities, share our progress, and hear ideas and feedback. Second, CAG members can sign up on the website to receive notifications for all Roux-related community meetings. The website

https://www.rouxcampusportland.org/roux-campus is the primary platform for announcements and information dissemination. Sam and his team share recordings of the Neighborhood Forum meetings and provide updates on construction activities and actively work to keep the community and the city well-informed. Furthermore, Sam and the Roux team hold numerous informal meetings, allowing us to discuss our plans and construction activities with interested neighbors and community members. CAG members are encouraged to sign up for regular updates, and the website is the central hub for detailed information.

Following the campus development presentation, which served as a grounding introduction to the Roux Institute at Northeastern University, Margaret opened the floor for questions, comments, or thoughts from CAG members.

Cherie Juniwiecz raised concerns and mentioned having a couple of questions. The first question pertains to the building's glass usage and a request for clarification on whether the glass was bird safe. The second question concerns the parking garage's size and its potential impact on the lighting for neighboring areas. In response, Tim Mansfield confirmed that the glass would be bird-safe and referred to a recent project he completed for Bowdoin College that used similar material. He acknowledges the importance of addressing the lighting concerns as part of the ongoing process. He emphasized the University's commitment to avoiding any adverse impact on the neighboring areas and ensuring safety.

Bill Needelman expressed curiosity about the pier's elevation and the criteria behind the elevation choice. Bill highlighted the importance of considering future sea-level rise and shared his interest in the decision-making process. In response, Tim and Sam elaborated on the site's elevation study and elevation adjustment to accommodate resilience. They mention the elevation target of 22.5 and the ongoing analysis considering factors like sea-level rise.

The conversation then shifts to transportation, with Eamonn Dundon inquiring about the discussion and commitments related to transitioning commuters to alternative modes of transportation. Tim and Sam underscored the overarching goal of reducing single-vehicle use, and ongoing discussions and planning for transportation.

The last part of the discussion pertained to zoning, with Mary Costigan explaining the process's origin and its collaborative nature involving the city and community. Mary mentioned that the B&M site was originally industrial-zoned and that zoning codes are instrumental in determining property use. To address this zoning designation, the city of Portland employs an "Institution Overlay Zone" (IOZ), an additional layer of zoning that requires more public involvement. This concept initially began with Maine Medical Center to assist institutions in planning ahead. Within the IOZ framework, institutional development plans must look 20 years into the future, while the current presentation only represents Phase One of the project.

Discussion of role of CAG and draft charter for the group

In the final segment of the agenda, Margaret Angell touched upon the Charter for the CAG. She highlighted how the CAG will play a significant role in fulfilling the Roux's commitment to public engagement within the Institutional Development Plan. This commitment entails two key aspects: neighborhood forums, which are quarterly (recently every two months) and are open to everyone, accessible via Zoom,with posted recordings. We encourage those working and living in the vicinity to spread the word and join these sessions. The meetings cover updates on both the Roux Institute's endeavors and the development process. The second component of our commitment involves the group assembled here, the CAG, comprising

representatives from various organizations. Margaret noted that they are actively seeking individuals from two entities, the Portland Housing Authority (covering Washington Gardens and Front St. development) and a sustainability representative, to be appointed. Recommendations for these roles are welcome.
The spirit of this commitment revolves around open dialogues and maximizing the institution's impact on the community. Margaret explained that the CAG will serve as a platform for open discussions and engagement with community members from different stakeholder groups, including exploring collaborations with fellow institutions. Suggestions for agenda items, ideas, or even proposals for presentations on specific topics are encouraged. The CAG's purpose will be to facilitate conversations and exchange ideas with relevant guests invited to meetings on specific subjects. Once we determine a suitable schedule, we will share dates for future meetings and make every effort to include a wide array of perspectives and voices, ensuring this is a meaningful and inclusive platform for community engagement.

Margaret also commented that the university remains open to edits and feedback for the Charter, emphasizing that the commitment embodies two fundamental principles: open dialogue and maximizing the university's impact on the Portland community. This encompasses various aspects, such as enhancing connections with schools and collaborating with the city's parks. CAG members are welcome to share their suggestions for agenda items and articulate how their work aligns with the university's mission. When we hold meetings on specific topics like K-12 engagement or parks, we will thoughtfully invite relevant guests to enrich our discussions.

Margaret encouraged any questions or comments at this stage. While dates for upcoming meetings are not yet set, we want to ensure they accommodate your schedules. We are considering Monday nights but can adapt the time if earlier starts are preferred. Concerning engaging parents from diverse linguistic backgrounds, we are looking into leveraging Northeastern University students to bridge language barriers, especially in the East Deering community, which is notably diverse. A query was raised about the top five languages spoken in Portland Public schools. The space at the Washington Garden Community Center has served as a meeting location, and Angie Taylor, Principal of Presumpscot school offered the school premises for a future meeting.

Furthermore, Chris Mallet suggested that the work of this group could inspire Northeastern teams to explore and act on ideas generated here and remarked if CAG members wish to use the Roux's current space, please reach out.

Next Steps & Looking Forward

- Margaret will share materials and set a date for the next meeting.
- In two months, an email will be dispatched to collect agenda items from the CAG.
- Your active engagement is essential, and we look forward to fruitful discussions and collaborations in the future.

The Roux Institute
Northeastern University

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

THE INITIATIVE FOR DIGITAL ENGINEERING AND LIFE SCIENCES (IDEALS) and THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY PROPOSED SITE PLAN FOR THE ROUX INSTITUTE CAMPUS

NEIGHBORHOOD MEETING
DECEMBER 13, 2023

The Neighborhood Meeting was held at the Washington Gardens Community Center, beginning at 5:00 pm and lasting approximately an hour and a quarter. Forty-six members of the public were in attendance, divided almost evenly between in person and online, as well as 20 representatives of IDEALS, Northeastern University, and their consultant team.

The public comments and questions are summarized below. The comment period followed a presentation by IDEALS and Northeastern regarding the proposed site plan and the latest updates from the Roux Institute. Major areas of interest included transportation, parking, alternative means of transport and future growth planned for the site.

- Is there an update on the future of the rail line?
- Will there be charging stations for e-bikes?
- What is the plan for Sherwood Street? Does it involve the removal of parking?
- Have you considered traffic cutting through Payson Park in your traffic study?
- What is the current and anticipated traffic volume?
- What types of energy systems will power the campus – will it be renewable?
- Will there be retail space?
- Commenter was concerned about traffic volumes and asked what happens if traffic is terrible.
- Who will pay for the required traffic improvements?
- What is the impact of the City's modifications to Veranda and Bates Street?
- Will there be snow removal from the bike lanes?
- Have you considered the Presumpscot Street shortcut?
- How are you projecting the campus to grown and how will that effect traffic?
- Have you considered sea level rise and resiliency?
- How were you able to demolish buildings before the site plan is approved?
- Why is the childcare facility located next to the garage with exhaust from vehicles?
- Where do you expect walkers on campus will be coming from? Will they drive there or walk there?
- How many parking spaces are you planning for and will you charge for parking?

- Suggestion: Please hire people to shovel the bus stops.
- Are there plans for a hotel in this site plan?
- Will the garage meet all of the future parking needs of the campus?
- Concern regarding affordable housing which is already scarce and the impact the project will have.
- What does the growth would look like in the next 5 years?

Adjourn 6:13

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

Neighborhood Meeting Sign-In Sheet

Wednesday, December 13, 2023

Washington Gardens Community Center - 66 Pembroke Street, Portland, ME 04103

IDEALS: Roux Campus 1 Bean Pot Circle, Portland, ME

Members of the Public in Attendance:

Name:	Email:
Bonnie McGarvey	bamcgarvey7711@yahoo.com
Gloria Page	GLORIA.J.PAGE@YAHOO.COM
Steve Von Vogt	HANNAHVONVOGT@gmail.com
BARRY SHEFF	BSHEFF@WOODARDCURRAN.COM
Linda Davis	ldavis6820@gmail.com
Patrick Thornton	patrickdthornton@gmail
Ed Cunningham	cunningham el57@gmail.com
Ben Carling	gbencarling@gmail.com
JAN WENSMAN	22 Galvin St

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

Neighborhood Meeting Sign-In Sheet

Wednesday, December 13, 2023

Washington Gardens Community Center - 66 Pembroke Street, Portland, ME 04103

IDEALS: Roux Campus 1 Bean Pot Circle, Portland, ME

Members of the Public in Attendance:

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Steve Bugden	sbugden363e@gmail.com (corrected email address)
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Jennifer Tingle	jennifer.tingle3@gmail.com
Katherine Caldwell	
Jeralyn Logue	JeralynLg@gmail.com
Sam Cady	samcady@hotmail.com
Peter Steckley	
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Marc Lamontagne	

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

Neighborhood Meeting Sign-In Sheet

Wednesday, December 13, 2023

Washington Gardens Community Center - 66 Pembroke Street, Portland, ME 04103

IDEALS: Roux Campus 1 Bean Pot Circle, Portland, ME

Members of the Public in Attendance:

Name:	Email:
[illegible]	
Colin Campbell	campbell13c2@gmail.com
Cheryl [illegible]	

IDEALS
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Roux Campus

Neighborhood Meeting Sign-In Sheet

Wednesday, December 13, 2023

Washington Gardens Community Center - 66 Pembroke Street, Portland, ME 04103

IDEALS: Roux Campus 1 Bean Pot Circle, Portland, ME

Developer and Consultant Team in Attendance:

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Wednesday, December 13, 2023

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IDEALS: Roux Campus 1 Bean Pot Circle, Portland, ME

Developer and Consultant Team in Attendance:

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Elizabeth Swain	elizabeth.swain@powereng.com

IDEALS
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Roux Campus

Neighborhood Meeting Sign-In Sheet

Wednesday, December 13, 2023

Washington Gardens Community Center - 66 Pembroke Street, Portland, ME 04103

IDEALS: Roux Campus 1 Bean Pot Circle, Portland, ME

Developer and Consultant Team in Attendance:

Name:	Email:
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On-line attendees
Roux Institute at Northeastern University Neighborhood Meeting
13-Dec-23

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Carol Bousquet	cbousquet@mainepublic.org
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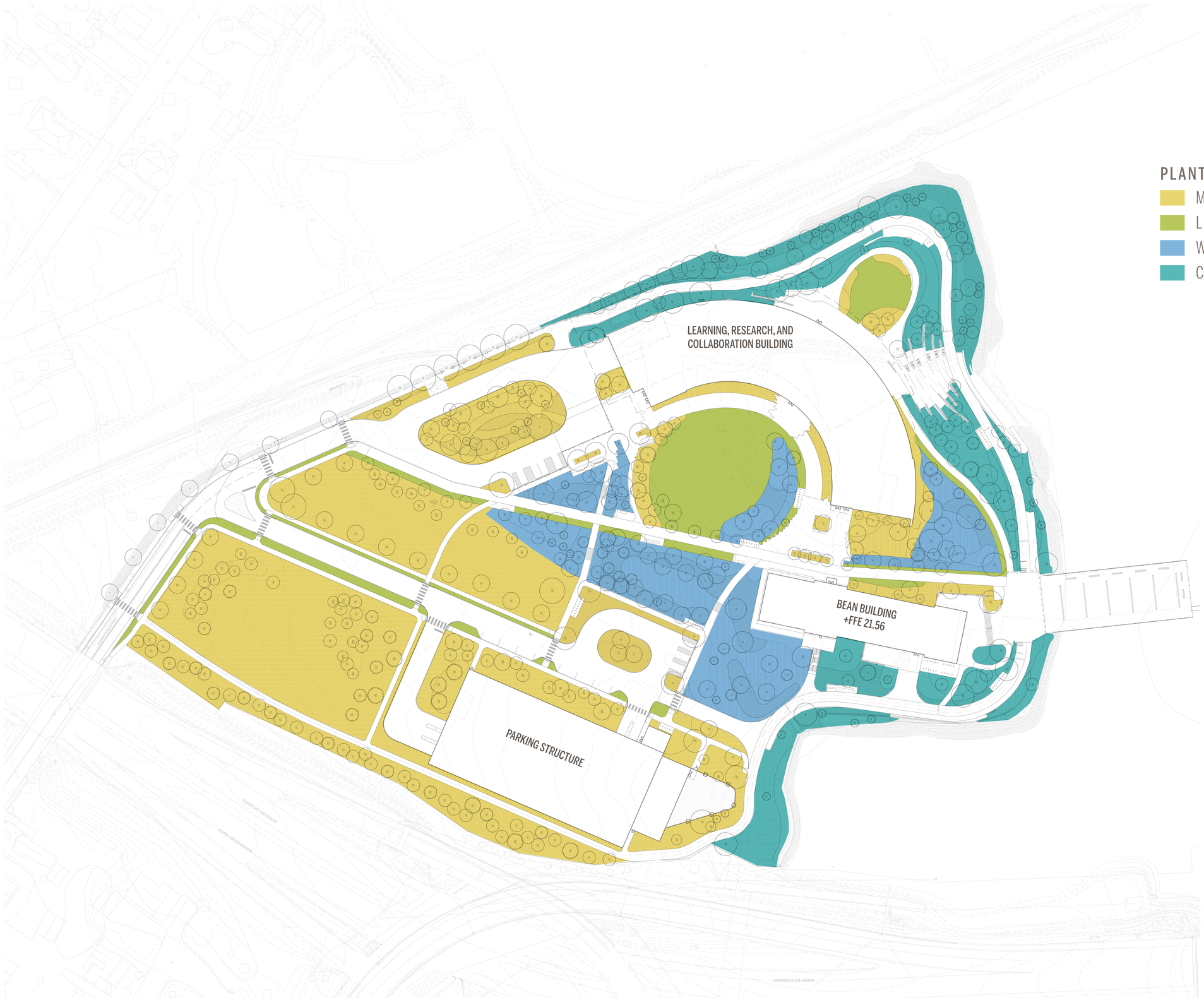
elizabeth wise	elizabethmwise@gmail.com
Daniel Yamartino	dhyamartino@gmail.com

Att. U



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Number	Revision	Date
2	ADDENDUM NO. 2	11.17.2023

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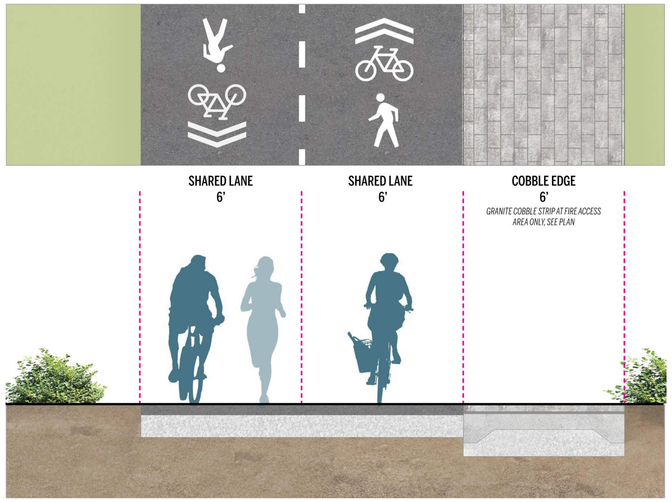
Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	ZH SK JC MS
Checked	STIMSON
Date	
Scale	1" = 40'

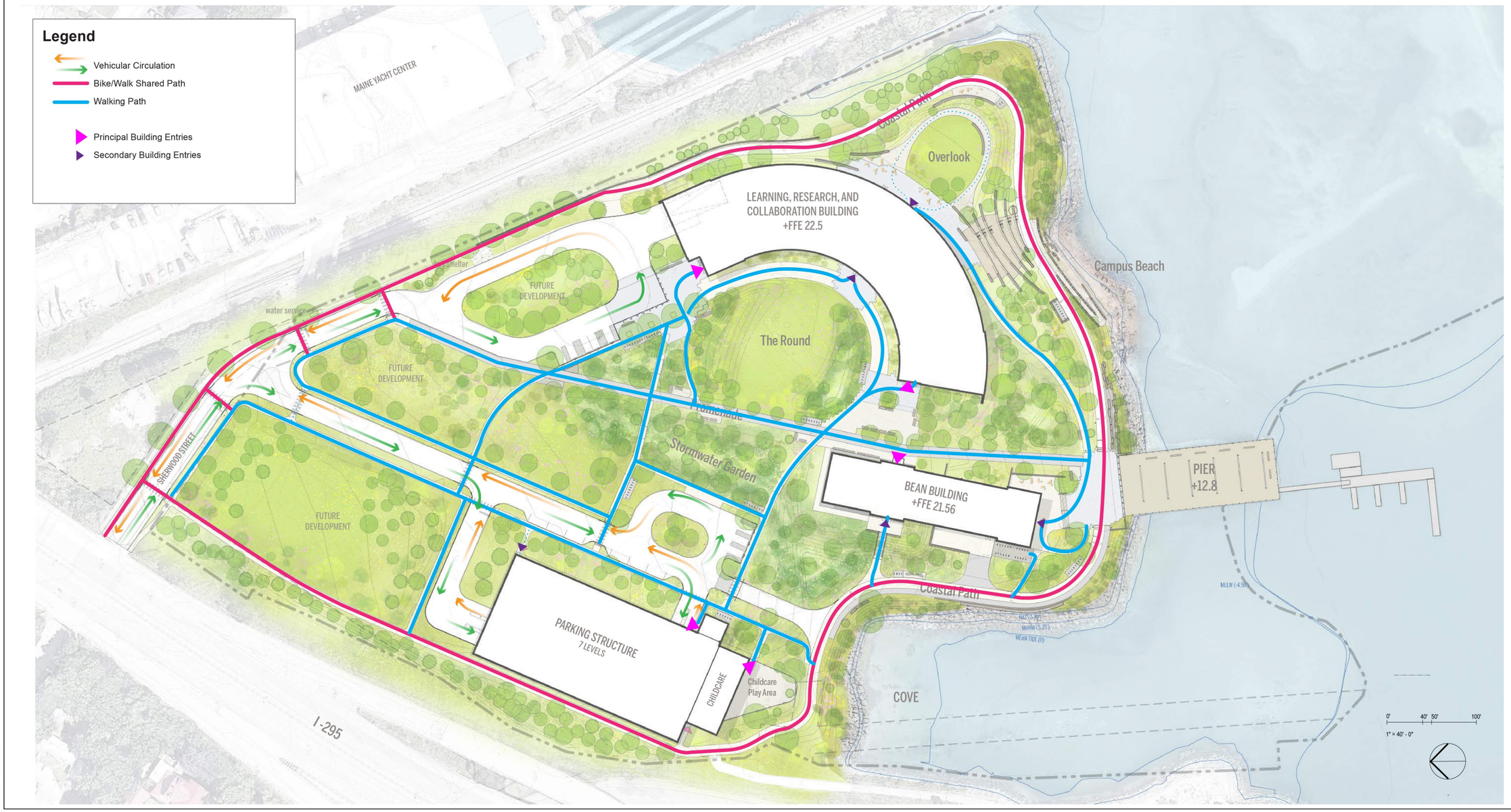
Drawing Title

PLANTING ZONE PLAN

Figure 3-14



BIKE PATH | TWO LANE SECTION



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Job #	2202
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Scale	

Drawing Title
Site Circulation Plan

Figure 3-17

2/1/2024 12:51:15 PM



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2	ADDENDUM NO. 2	11.17.2023

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Project THE ROUX INSTITUTE
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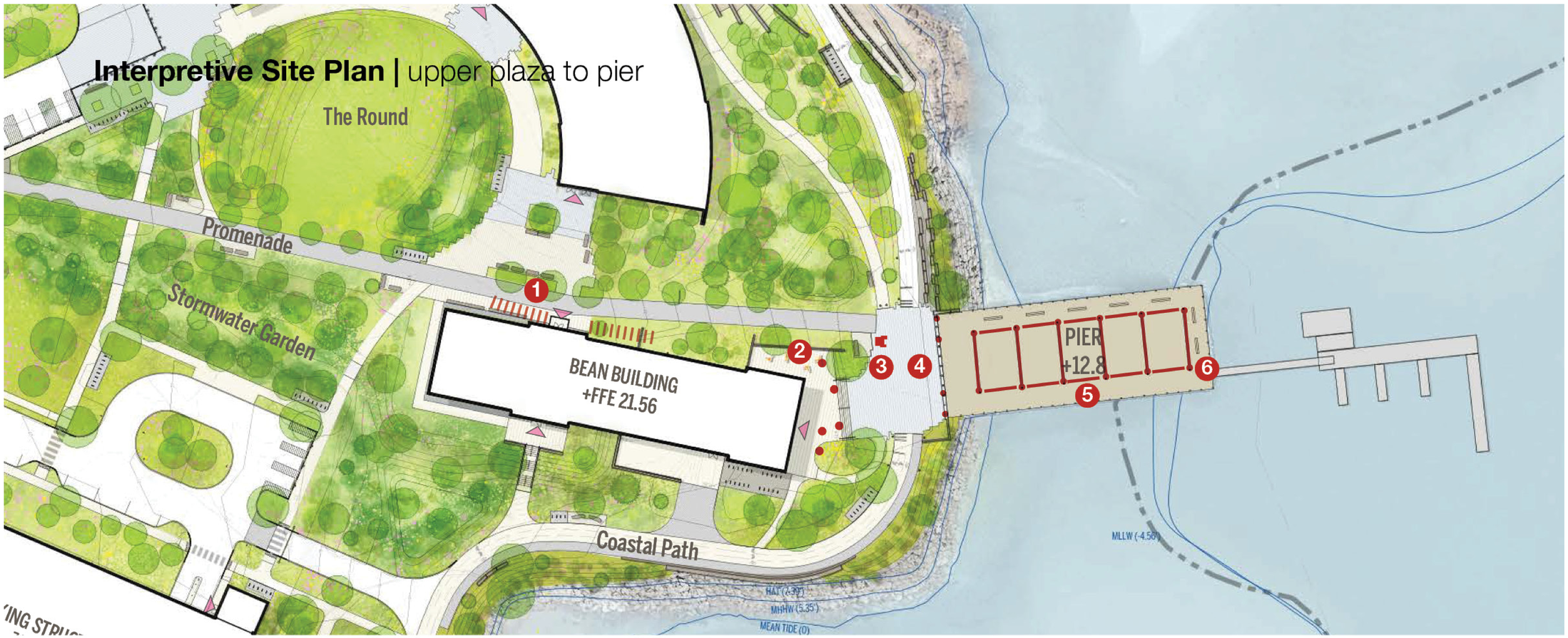
Date
Scale 1" = 40'
Drawing Title

AREAS OF PUBLIC OPEN SPACE PLAN

Figure 3-18

Interpretive Site Plan | upper plaza to pier



1. **Railroad Track & Cart Stop**
2. **Bean Pots & Retort Baskets**
3. **Granite Interpretive Post**
4. **Mooring Bollards & Cleats**
5. **Pier Decking Inlay**
6. **Pier Light Poles**

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Scale	

Drawing Title
Codfish Building Interpretive Elements

Figure 3-24

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Key

- Multi-Use Path
- Bicycle Parking - Exterior
- Bicycle Storage - Interior
- Metro Bus Stop
- Bikeshare

LEARNING, RESEARCH, AND COLLABORATION BUILDING

The Round

Campus Beach

BEAN BUILDING +FFE 21.56

PARKING STRUCTURE

MLLW (-4.58)

MHW (3.39')

MHHW (3.35')

MEAN TIDE (0)

75' BUFFER FROM MHHW

0' 40'

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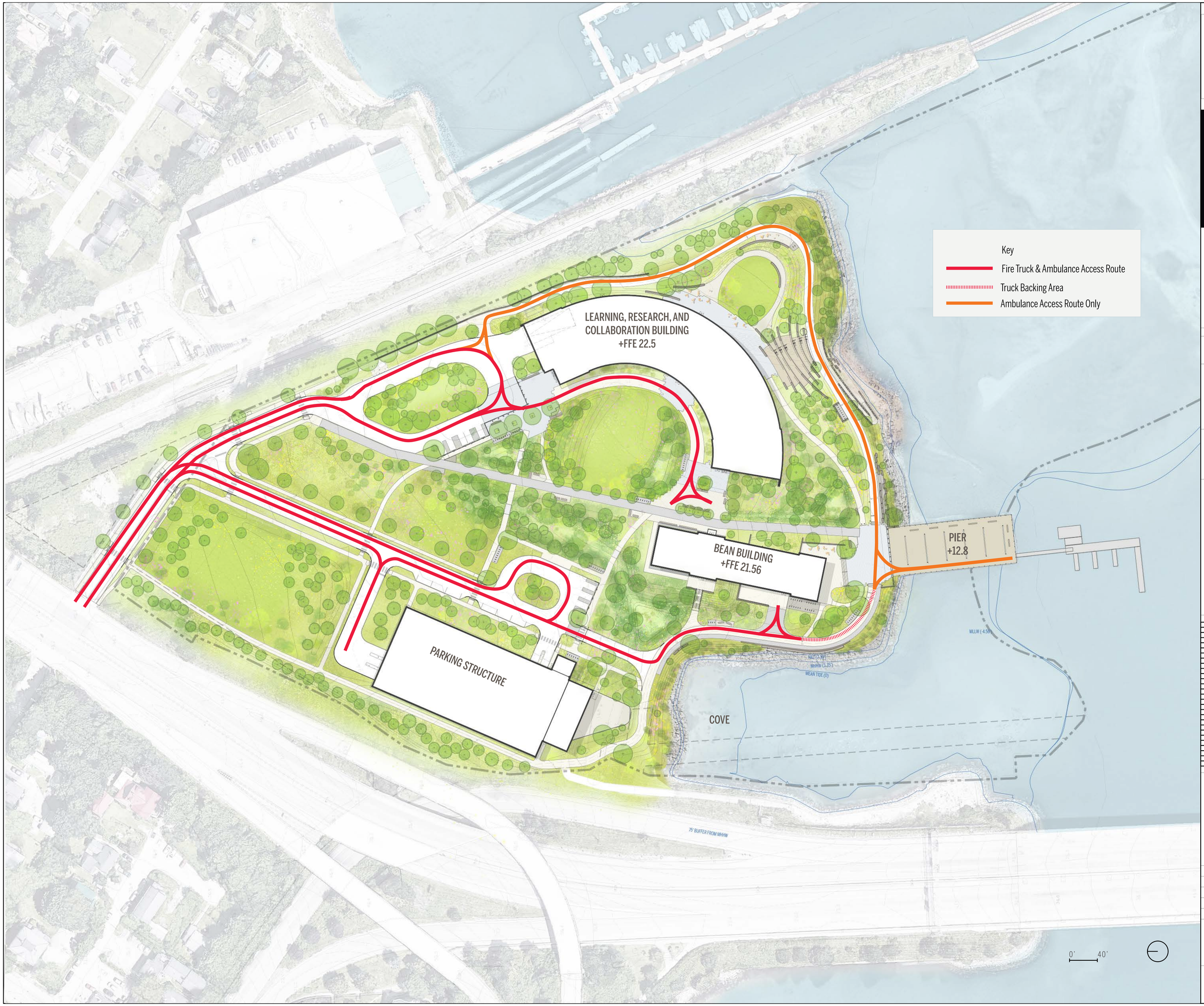
Drawing Title

BIKE AMENITIES AND CIRCULATION

Figure 5-1



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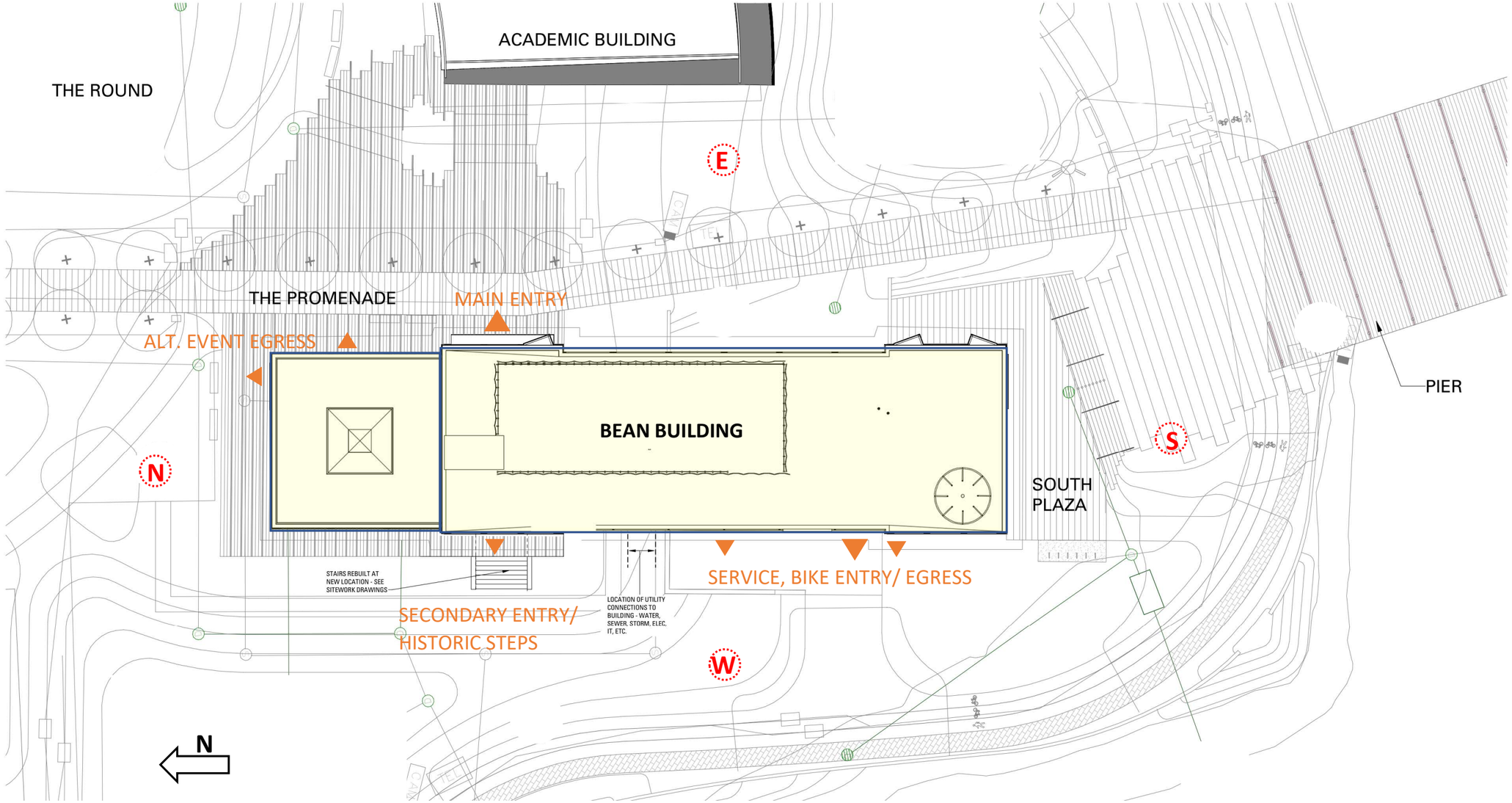
Date			
Scale	1" = 40'		

Drawing Title

EMERGENCY ACCESS ROUTES

Figure 5-2

ARCHITECTURAL SITE PLAN





BOLA BIKE RACKS: 95 TOTAL

MAINE YACHT CENTER
Coastal Path
Overlook
LEARNING, RESEARCH, AND COLLABORATION BUILDING +FFE 22.5
bus shelter
water service
FUTURE DEVELOPMENT
The Round
Campus Beach
Promenade
Stormwater Garden
SHERWOOD STREET
FUTURE DEVELOPMENT
BEAN BUILDING +FFE 21.56
PIER +12.8
PARKING STRUCTURE
CHILDCARE
Childcare Play Area
Coastal Path
COVE
I-295
75' BUFFER FROM MHHW
MLLW (-4.58)
MHHW (3.35')
MEAN TIDE (0)
0'
40'

2 14 8 8 7 8 8 22 4 8 6

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Date	
Scale	1" = 40'

Drawing Title

EXTERIOR BICYCLE PARKING

Figure 5-4

Memorandum

To: Chuck Hewett
Sam Reiche

Date: October 31, 2023

Project #: 58570.00

From: Jennifer Conley, PE, PTOE

Re: The Roux Institute at Northeastern University EV Charging Station Demand Analysis

The Roux Institute at Northeastern University is providing the following Electric Vehicle (EV) study as specified in the City of Portland Technical Manual Section 1, Subsection 1.14 (Electric Vehicle Infrastructure). The Technical Manual states that

> *In the case of new structured and surface parking of greater than 100 spaces, the review authority may establish the EV parking requirements on the basis of an EV parking demand study. Such study shall be prepared by a qualified professional using industry best practice, and account for future growth in EV demand.*

The Roux Institute at Northeastern University's proposed garage exceeds this threshold since it has been designed to accommodate 708 spaces. The garage is designed to meet the campus' long-term needs and will not be used to full capacity in its first years. For this phase, 16 of those parking spaces will be used to accommodate parking for 66 bicycles and the remaining 692 parking spaces will be used to accommodate vehicular parking. In addition to the garage spaces, there will be 14 parking spaces provided at grade on site.

As a result, this study finds that 24 EV charging spaces are needed to meet the projected EV charging demand in 2027. An additional 38 EV-ready spaces should be prepared to support demand into 2032. The Roux Institute at Northeastern University is committed to annually monitor EV charging use during the TDM monitoring and reporting process and increase the number of EV charging spaces as needed to meet future demand.

Existing EV Ownership Data

The U.S Department of Energy provides an EV Infrastructure Projection Tool that presents recent local EV information for Portland and South Portland. By the end of 2021, there were 475,600 light-duty vehicles on the road in Portland and South Portland and 4,500 (or 0.9%) of those were plug-in electric vehicles[1].

As presented in the *Maine Won't Wait* Climate Plan - 2022 Progress Report, there were 8,594 EVs (including Battery Electric Vehicles/BEVs and Plug in Hybrid Vehicles/PHEVs) registered in the State of Maine[2] in 2022. This represents 1% of the total registered vehicles in the state of Maine in 2022[3].

[1] https://afdc.energy.gov/evi-pro-lite
[2] https://www.maine.gov/climateplan/sites/maine.gov.climateplan/files/inline-files/MWW_Climate%20Plan%20Update%20December%202022_digital.pdf
[3] https://www.maine.gov/sos/bmv/stats/Reg%2022.pdf

Projected Roux Institute at Northeastern University EV Charging Demand

The share of EVs is expected to grow in line with national trends. By interpolating between years shown in Table 1[4], an EV share of 9% is expected at opening day in 2027. Additional EV-ready spaces will be needed to accommodate a projected increase to 15% of vehicles by 2032[5].

Table 1 National EV Projections

	2020[1]	2025[1]	2030[2]
Total EV population (millions)	1.8	7.1	na
EV share of new light duty vehicle sales	2.3%	11%	na
EV share of US light duty vehicle population	1%	3%	15%

Source: [1] Charging Up America: Assessing the Growing Need for U.S. Charging Infrastructure Through 2030 Gordon Bauer, Chih-Wei Hsu, Mike Nicholas, and Nic Lutsey, July 2021 https://theicct.org/sites/default/files/publications/charging-up-america-jul2021.pdf
[2] Building the electric-vehicle charging infrastructure America needs https://www.mckinsey.com/industries/public-sector/our-insights/building-the-electric-vehicle-charging-infrastructure-america-needs

A parking analysis was conducted to understand how many vehicles would be on campus during each part of the day in 2027 and 2032. Although people arrive and depart throughout the day, the campus population can be broadly divided into day and night users. Charging infrastructure should be sized to meet the needs of both groups, which can be considered non-overlapping. Table 2 presents the assumptions used to estimate the total number of projected EVs on campus in 2027. The parking analysis demonstrates an anticipated overlap between the daytime and evening parking demand resulting in the peak parking demand at 4PM. Based on expected population and assumptions shown in Table 2, there will be an estimated 538 vehicles parked on campus throughout the daytime period and 513 vehicles parked on campus throughout the evening period when the campus opens.

[4] https://theicct.org/sites/default/files/publications/charging-up-america-jul2021.pdf
[5] https://www.mckinsey.com/industries/public-sector/our-insights/building-the-electric-vehicle-charging-infrastructure-america-needs

Table 2 2027 Parking Demand Data

	Graduate Students	Affiliated Users	Special Events	Embedded Start ups	Staff/Faculty/ Research	Signature Partners	Total
Total	**1,899**	**35**	**150**	**60**	**225**	**55**	**2,424**
% Auto Mode Share	80%	90%	90%	90%	90%	90%	
% On Site Daily	43%	100%	100%	84%	84%	84%	
% Internal Capture Rate	0%	0%	0%	10%	10%	10%	
% Daytime Users[1]	40%	100%	33%	100%	80%	100%	
% Evening Users[2]	60%	0%	67%	0%	20%	0%	
Daytime Vehicles on Campus	261	32	45	41	122	37	538
Evening Vehicles on Campus	392	0	90	0	31	0	513

Source: The Roux Institute at Northeastern University
1 Daytime users on Campus from 8AM – 4PM
2 Evening users on Campus from 4PM – 11PM

A level 2 EV charger provides approximately 25 miles of range per hour of charging while a DC Fast charging provides approximately 100-200 miles per 30 minutes of charging[6]. Given that most students and staff/faculty live within 50 miles of the campus (currently 87% of students are within 50 miles), the Roux Institute at Northeastern University plans to place time limits on Level 2 chargers. Due to the nature of the distribution of daytime and evening classes, daytime students and staff/faculty are expected to be on campus between the hours of 8AM and 6PM and evening students and staff/faculty are expected to be on campus between the hours of 4PM and 11PM. In addition, events will take place throughout the daytime and evening periods. To be conservative, it is assumed that each EV charging space will turn over every three hours. As shown in Table 3, this would allow for each EV charging space to be used 2 times during both the daytime and evening periods each day. The Roux Institute at Northeastern University plans to install signage that indicates 3-hour charging limits with idle fees applied after this time. Table 3 demonstrates how 24 EV charging stations would meet the demands of the Roux Institute at Northeastern University based on the distribution of parking demand during the daytime and evening periods.

[6] https://afdc.energy.gov/fuels/electricity_infrastructure.html

Table 3 2027 EV Parking Demand Data

	Daytime Period	Evening Period
Time Period	8AM – 4PM[1]	4PM-11PM
# of Hours	8[1]	7
# of Hours to charge each EV	2	2
# of Charging Periods[2]	2	2
Vehicles on Campus	538	513
% EV Vehicles on Campus	9%	9%
#EVs on Campus	48	46
# of EV Charging Spaces Needed	24	23

Source: The Roux Institute at Northeastern University

[1] Assuming only 8AM – 4PM for number of hours since daytime period overlaps with the evening period to not double count 4PM-6PM. However, a portion of daytime students are still parked until 6PM.

[2] Assumes only two charging periods in each time frame in the event that turnover is not as vigorously enforced. Actual capacity will be three charging periods per time frame.

EV Parking Management and Future Monitoring

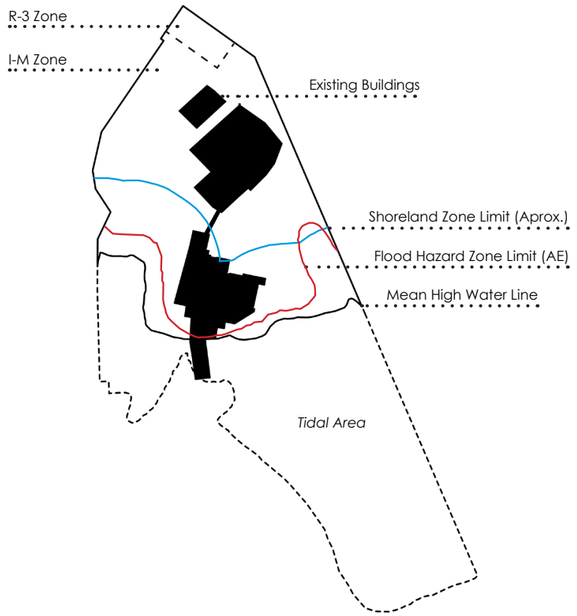
To promote turnover, time limits will be enforced and chargers will be connected to the internet so that drivers can check availability in real-time. To manage the shared use of the EV charging spaces, a reservation system will be investigated. This could allow drivers to reserve charging time in advance or allow drivers to place a brief hold on an available space (e.g., 15 minutes to walk to the garage and move their car to the charger). Other management systems could include a valet system and/or a mobile app.

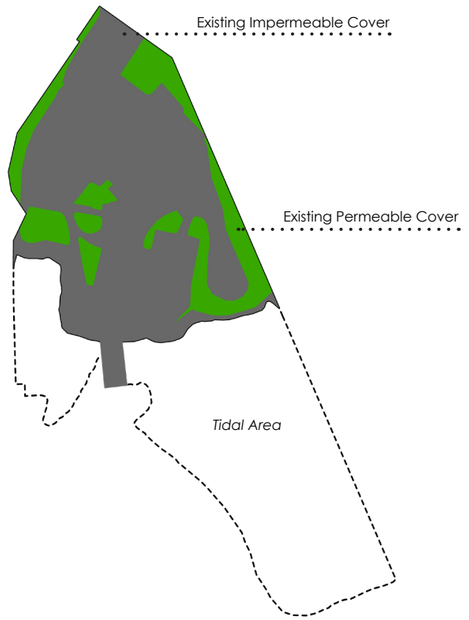
As part of the TDM monitoring and reporting process, the Roux Institute at Northeastern University plans to track charging session data to assess the existing and projected needs for EV charging on campus. The Roux Institute at Northeastern University will also collect data on EV ownership during the permit process.

At opening year, this study finds that 24 EV chargers will satisfy demand for charging on campus. Consistent with this analysis, the calculation was repeated for 2032 with higher enrollment and greater EV adoption, finding that 62 EV chargers will meet demand at that time. Therefore, the Roux Institute at Northeastern University proposes to open the garage with 24 EV chargers and have an additional 38 EV-ready.

Site Context









Under current conditions, the site is inaccessible to the public.

Zoning
The site is currently zoned B-5 Mixed-Use Business with an Institutional Overlay Zone. Parcels adjacent to the site include I-L (Low-Impact Industrial) at the Maine Yacht Center to the east and R-3 (Residential) across the railroad tracks to the north. Parcels west of I-295 are generally zoned R-5 (Residential) and B-2 (Mixed-Use Business).

Existing Buildings & Parking
City property assessment records indicate existing buildings were previously used for manufacturing and warehousing. The site has 272 striped parking spaces and additional unstriped trailer parking areas. The reported general building use and total floor area is provided in the table below.

Size of Existing Buildings (Food & Seafood Processing, Packing, and Distribution Land Use Classification)	Total Floor Area (SF)
Main Production (Bean) Building	63,255
Warehouse, Annex and Fuel Storage Building	49,897
Maintenance (Fish House) Building	16,728
Storage, Labeling and Packing Building	80,180
Finished Product Warehouse Storage Building	9,572

Relationship to Water
The parcel includes approximately 13+ acres above mean high water line (the site) as well as an adjacent 11 acres of submerged lands. The site has 1,000 linear feet of waterfront, within associated Flood Hazard and Shoreland Zones.

The City of Portland designates a shoreland zone within 250 feet of tidal water bodies. Within the shoreland zone, a minimum setback of 25 feet from the normal high-water level is required for structures, roads, and driveways.

Portions of the site are delineated as Special Flood Hazard Areas according to FEMA's Flood Insurance Rate Map (FIRM). The current and effective FIRMs for Cumberland County, based upon FEMA's 1986 publication, indicate portions of the site are within the AE Zone, representing 1% annual chance of flooding. Base flood elevations range from 9 to 11 feet.

Impervious Areas
The majority of the site is developed land, with limited areas of natural vegetation. Approximately 10 acres of land above the mean high-water line are impervious (paved areas, building roofs, etc.). The remaining 2.5 acres of permeable area include lawn and approximately half an acre of vegetated, early successional non-lawn area adjacent to the rail corridor abutting the site to the east.

Not only is the site largely covered in pavement and building structures, it is also inaccessible to the public. Fencing prevents access to the waterfront and the interior of the site. This security was necessary for industrial use. However, new development can "soften" site edges and provide improved access to the waterfront.

Geotechnical & Environmental Investigations
IDEALS conducted preliminary soil investigations of the site. The results of these investigations inform the design of structures. Beneath a surficial layer of pavement or topsoil, the test borings encountered a soil profile generally consisting of fill and uncontrolled fill, overlying glaciomarine clays or bay mud, overlying marine sands, overlying glacial till, and overlying refusal surfaces (probable bedrock).

IDEALS also conducted environmental site assessments, including review of available documentation (such as current permits, record drawings, historic photos, and maps) and site investigations involving soil and groundwater sampling, as well as survey for and sampling of building materials. The environmental site assessments indicated no evidence of oil or hazardous material releases that would require remediation. Environmental conditions including fill soil that may be encountered during earthwork or generated as excess material will be properly managed within the context of the construction project. IDEALS identified hazardous building materials including PCB-contaminated caulking and asbestos containing materials (ACM) consistent with what would reasonably be anticipated given building ages, which will be remediated during the demolition and development process.

Phasing

Before shifts in transportation and distribution networks, the site offered a competitive location for food processing and manufacturing in the 20th century. Now, the site's many compelling attributes enable the pursuit of science, education, and entrepreneurship for the 21st century and beyond. The Roux Institute Campus is envisioned as a hub for collaboration, innovation, and inspiration that contributes to the education of Roux Institute students, stimulates Maine's economy, and enriches the lives of Portlanders through the resources it offers.

While the proposed vision represents an ambitious undertaking, the entire endeavor is based on simple tenets of placemaking: provide a mix of uses, allow for creativity and entrepreneurship, and encourage recreation. This vision takes time to grow and develop. Understanding that institutional uses have phased planning horizons, this IDP considers near, medium, and long-term growth plans. The resulting phasing of the development is represented in the figure to the right.

Fortunately, the nature of the Roux Institute at Northeastern University lends itself well to phasing strategies. Corporate partnerships are a core part of the institute's educational strategy, meaning that office and laboratory partners will sit comfortably within the primary academic building during its first years, before extending outward in the longer term. As the site develops, more and more students, faculty, and employees will be drawn to live and work on site. Like any new campus, as the population of students, residents, and employees grow, so will demand for limited retail and restaurants. In addition, the expanding program needs of the campus may be supported by such uses as on site daycare, bike commuter facilities, maintenance facilities, and security offices.

The proposed vision offers a realistic framework for flexible growth. As the Roux Institute Campus evolves, and the world changes, new opportunities and needs may present themselves. Neighborhood feedback will also inform future growth. A core presence of educational, research, incubator, and partner space will provide the Roux Institute Campus with a strong start, around which additional community needs and services can thrive over time.

Anticipated Phasing (Cumulative Totals)

Building Program	Near-Term (2027–2032)	Medium-Term (2032–2037)	Long-Term (2037–2047)
Academic & Research	Students: 1900–3,100 245,000 sf.	Students: 3,100–3,800 245,000 sf.	Students: 3,800–5,100 390,000 sf.
Office/Lab Partners	Included in the LRC Building	Included in the LRC Building	200,000 sf.
Incubator & Accelerator	58,000 sf.	58,000 sf.	58,000 sf.
Residential	NA	175–425 Units 150,000–350,000 sf.	525–650 Units 450,000–550,000 sf.
Hotel	NA	90,000 sf.	90,000 sf.
Retail (e.g. Daycare, Café/Restaurant, Market, Kayak, etc.)	7,500 sf.	15,000 sf.	25,000 sf.
Totals	**310,500 sf.**	**558,000–758,000 sf.**	**1.213–1.313 million sf.**

**values are gross square footages*

Near-Term Illustrative Site Plan



At the completion of each phase, the Roux Institute Campus will be a model of comprehensive design. At least three acres of permanent, significant public space will be established early in the development of the campus to ensure public benefit. Interim features such as surface parking lots or construction staging areas will be designed to not detract from the pedestrian experience through planting, lighting, wayfinding, graphics, artwork, or fencing. Other interim areas of the site will be appropriately landscaped or accommodate gathering on lawns and hardscape spaces. Interim features such as parking lots may also be programmed with markets, festivals, or cultural events. Lighting and layout of these spaces will be considered to facilitate flexibility so that they can accommodate a variety of campus events.

Development Plan

Near-Term



Mid-Term



Long-Term



- Pedestrian
- Bike/Pedestrian
- Water Taxi
- Potential Shared Use Path Connection
- Vehicular
- Primary Entrance
- Possible Off-Ramp

Development Plans are conceptual and intended to illustrate how design guidelines and principals could potentially be implemented at this site.

Design Guidelines

Waterfront
- The waterfront will be publicly accessible to provide a variety of open spaces throughout all phases of development that foster social interaction.
- New principal buildings on the waterfront shall include a publicly accessible entrance to interior public space (if provided) from the waterfront side and upland side of the building along an anticipated desire line. Said interior public space, (if provided), may be closed to the public during special events, outside normal operation hours, and when necessary for security or public safety purposes.

Cohesive campus
- The overall composition and experience of the campus will be considered for cohesive identity from approaches along I-295 and views from the East Deering neighborhood.

Historic preservation
- Buildings, site development, circulation, and open space will respect the B&M Cannery Building, a designated historic landmark.

Connectivity
- Prioritize the bicycle and pedestrian circulation network on campus while providing connectivity for auto, public transit, service, and emergency vehicles at each development phase.
- Surface parking lots shall be located to the maximum extent practicable toward the rear or side of a building not occupied by a principal entry to a building facing a street, public right-of-way, major pedestrian access routes, open spaces, and/or the waterfront.

Open space
- Open space will be publicly accessible to provide multiple functions for recreation, social gathering and buffers that integrate within the overall composition and experience of the campus at each development phase.

Sustainable practice
- Buildings and site development will incorporate sustainable technologies in building design, orientation, energy production and sensitivity to natural resources at each development phase.

Resilience
- Buildings and site development will incorporate resilience strategies to account for flooding, severe weather events and integration of publicly accessible spaces at each development phase.

Building design
- Building facade materials will be of high quality, durable to the marine climate and contribute to an attractive public realm. The first 35 feet of building height shall complement the pedestrian character in materiality, transparency, and detailing.
- Rooftop appurtenances will be incorporated, screened, and set back from roof edges to reduce visual impact from the surrounding neighborhood.

Building entrances
- Building entrances will include prominent facades and be oriented toward, located adjacent to, or accessible from rights-of-way, major pedestrian access routes, or open spaces.

Mitigation of impacts
- Buildings and site development will endeavor to minimize potential negative impacts related to shadows, wind, noise, heat, glare, lighting, contaminants, and the environment.

Visualizing the Guidelines: Potential Long-Term Layout & Circulation



Richard Weare <dewdev2013@gmail.com> Feb 14, 2024, 2:41:53 PM (22 hours ago)
to planning@portlandmaine.gov

Sent from Mail for Windows

I attend the Planning Board meeting last night and provide a few comments during the public input session.

I did not include the following in my presentation, which I would like to make now for distribution to the entire Planning Board.

1. As you know all vehicle traffic, bikes & walking public will all enter and exit on only one street to Bean Pot Circle. Most walkers and bikers will need to cross the intersection of Veranda Street and Washington Ave. a very busy and dangerous intersection.

I would suggest that the developer participate in or even implement a study on its own on how to directly connect the back cove trail to the Bean Pot Circle (without going over any streets). The developer should also participate in the cost for this study as well as participate in the cost to make this trail connection.

2. With the amount of traffic generated by this development, any future plans for a hotel should not be approved. If the developer wants to construct a dormitory for students under a phase 2 project, that would be acceptable in my opinion.

Thank you have your attention in this matter.

Richard Weare

646 Washington Avenue

EAST DEERING FOR RESPONSIBLE DEVELOPMENT
RE: ROUX INSTITUTE APPLICATION FOR MDOT TMP PERMIT

2027 TOTAL STUDENTS (1,899)		**2027 TOTAL ALL OTHERS (379)**	
80% Drive Mode	1519	90%	341
10% Transit	189	5%	19
10% Bike/Ped	189	5%	19
Total	1,899	Total	379

2032 TOTAL STUDENTS (3,123)		**2032 TOTAL ALL OTHERS (1,093)**	
80% Drive Mode	2,498	90%	984
10% Transit	312	5%	55
10% Bike/Ped	312	5%	55
Total	3,123	Total	1,093

Reference Pg. 7, "Calculated trips conservatively in this permit..."

In **2027** an estimated total of 2,278 students and other users will be entering/exiting the campus daily.

- Peak AM hours from 8-9am projected 237 vehicles entering the campus.
- Peak PM hours from 5-6pm projected 521 vehicle trips entering/exiting the campus.

In **2032** an estimated total of 4,216 students and other users will be entering/exiting the campus daily.

- Of which 3,482 students/users will be entering/exiting the campus in vehicles daily.
- The remaining 1,094 other users will be entering/exiting via other mode share options.
- Peak AM and PM hours shown above will be increased significantly.

TRAFFIC SOLUTIONS – How will Roux solve the problem of increased traffic impact on the neighborhood with realistic mitigation solutions especially at Peak traffic times?

- Peak pm hours projected vehicles entering/exiting Sherwood Street will be **521** vehicles in a single hour from the single entrance in/out of the campus.
- Proposed improvements to that intersection do little to mitigate the profound impact of increased traffic. Upon entering, cars will back-up on Veranda Street and on I-295; upon exiting, the cars will go left stacking up on Veranda Street and likely many will cut through from Sherwood Street to the traffic light on Presumpscot Street.
- Traffic Level of Service (LOS) of a current rating of E will fall to an F on already stressed intersections of Washington Avenue/I-295 ramp at Veranda/Bates, Washington at **Presumpscot** and Sherwood/Veranda Street. Operational mitigation is questionable as to reducing impact.
- Current situation at the Presumpscot/Sherwood Street intersection is dangerous at the Peak Times when busses and parents are dropping off and picking up the over 300 students with cars backed up on both sides of the road in front of the school, stacked vehicles in the driveway entrance and oncoming traffic attempting to go around this dangerous, chaotic situation.
- Suggested "Gateway" treatments at the Presumpscot Street intersection will need to be carefully designed not to worsen the current situation and divert traffic into the abutting neighborhood and endanger the children who walk to and from school.
- Traffic monitoring does not address what steps will and can be taken if the goals are not met.

TRANSIT – Metro operates off a 'pulse' system originating at Elm Street (downtown) which will require transfers for Bus Route 7 and 9 to get to the new campus. This will impose considerable inconvenience on riders not living in close proximity to either route.

- This plan is compared to the very convenient Metro Husky Line that drops riders 1,000 feet from the current entrance to Roux University at the WEX building– which does not currently go to the new campus.
- In a 2-8.24 letter to the Planning Board from Mike Trembley, Director of Transit Development, he stated, **"in order to achieve the transit mode share goals set for the site, it is likely that a more direct transit options will be needed. Roux Institute should have direct, front door access for transit to be seen as an appealing option by as many travelers as possible."**
- The proposed no left-turn off Veranda to I-295 presents a problem for METRO bus Route 7 returning to Downtown from Falmouth via Veranda Street.

BIKE/PED ENHANCEMENTS –there is **NO direct shared path connection to the new campus** currently and data is lacking seasonal and weather adjustments to Mode Share projections.

- Assumptions and future infrastructure improvements are based on a lot of "what if" variables and funding.
- Suggested future commitment to infrastructure improvements is contingent upon funding.
- Bike Share (Tandem Mobility) only operated from April to November.
- Mode Share targets are optimistically aggressive as mitigating options.
- Estimated timeline for implementation and funding in Phase I have not been provided.

PARKING – designed to accommodate 625 spaces with 14 exterior parking spaces. Based on travel patterns, the result of analysis predicts 581 spaces at peak demand and 881 spaces (?) in 2032 given projected mode share according to applicant.

- Students currently do not pay for parking but **"will be charged at the future campus."**
- Rates for parking will be "market rate" (Portland's current market rate if $4 or more per hour, $22 or more per 24 hours and an average of $250 monthly.
- The high cost of parking is proposed to force those seeking parking to seek alternative options such as transit or bike/ped. Experience with other institutions has shown us that mitigation options have yielded lower-than-expected results. And those abutting neighborhoods have had to bear the brunt of on-street parking.
- Serious consideration should be given to off-site parking with shuttle service to reduce vehicle trips into the campus site and neighborhood on-street parking as was required of Maine Medical and UNE.
- The proposed use of MDOT lots with shuttle service has no supporting data as to how much it will mitigate the parking supply and demand.

SUMMARY: Simply stated, we do not oppose the Roux development. However, they have not adequately addressed the key traffic issues identified by the neighborhood and our traffic consultant nor have they provided realistic, concrete solutions for the impacts of their project.

Zachary Powell <zpowell@portlandmaine.gov>

Fwd: Roux development - traffic

Zachary Powell <zpowell@portlandmaine.gov> Thu, Apr 18, 2024 at 9:38 AM
To: Zachary Powell <zpowell@portlandmaine.gov>

---------- Forwarded message ---------
From: allison brown <Unknown>
Date: Monday, April 15, 2024 at 11:33:43 AM UTC-4
Subject: Roux development - traffic
To: planni...@portlandmaine.gov <Unknown>

To Whom It May Concern:

As a concerned resident of East Deering, I have profound apprehensions regarding the transportation plan submitted by Roux, slated for review at the upcoming workshop on April 23, 2024. Living adjacent to the proposed 1.1 million sq ft development, I must highlight the potential ramifications of the anticipated surge in traffic. Despite Roux's insistence that their project will only marginally affect existing congestion, recent analysis fails to support this claim.

The infrastructure surrounding I-295 exit 8, particularly the Washington Ave - Veranda St intersection and Veranda Street itself, is already strained under the weight of current traffic demands. With Roux's proposal estimating over 4500 students and faculty commuting during peak times, the situation will inevitably deteriorate, potentially leading to gridlock throughout the day. Roux's traffic projections grossly underestimate the impending traffic volume.

Given the diverse amenities planned within the development - including public spaces, a hotel, restaurants, and retail outlets - it's clear that it will become a major destination point, further amplifying traffic. Consequently, the actual traffic generated from this site is poised to exceed the projected increase during peak hours.

The current streets, entrances, and exits to I-295 in the East Deering neighborhood are already strained and hazardous. While Roux has proposed bike and walking trails, and reliance on the Metro to alleviate congestion, these solutions are inadequate. Biking and walking may suffice seasonally, but the Metro has yet to prove itself as a reliable mode of city-wide transportation. Additionally, high parking fees on campus will inevitably push individuals to park within already congested residential areas. Roux has yet to commit to or come up with, a plan for satellite parking as a possible way to ease congestion. I urge the planning board to adopt a more realistic assessment of the traffic implications of this development.

Thank you for your time and consideration.

Allison Brown, 25 Lennox St., Portland, ME.

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Please excuse any errors.
~allison~

Cheryl Leeman <leemanc174@gmail.com> 5:25 AM (5 hours ago)
to planningboard@portlandmaine.gov

TO: Planning Board Chairman Mazer and members:

These are the facts! They speak volumes as to the seriousness of the traffic impact. The East Deering neighborhood respectfully ask that every consideration be given to their own data in your review of TDM requirements and site plan - and any subsequent approval be contingent upon implemented mitigation plans prior to commencement of construction not after the project is occupied or traffic monitoring as the site is occupied. (Mode share implementation is contingent upon approved funding from a federal RAISE grant with a construction start date of July 2028 and completed December 2031.)

UNADJUSTED DAILY TRIP GENERATION ANALYSIS

	7am-2pm	3pm	4pm	5pm	6pm	7pm	8-10pm	7am-10pm
Total	2210	311	595	825	532	366	899	5738
Enter	1515	74	260	437	268	122	174	2850
Exit	694	236	336	387	264	244	725	2586

SOURCE: VHB table from Section 7 of TMP application to MDOT

PROJECTED % of TRAFFIC TYPES

Students 2027 = 1899 and other = 525 Students in 2032 = 3123 and other =714

Est # of Vehicle Driver Students 80% (1,519 in 2027 and 2,498 in 2032)

Other 90% (473 in 2027 and 643 in 2032)

Est # of Metro Riders	Students 10% (190 in 2027 and 312 in 2032) Other 5% (26 in 2027 and 36 in 2032)
Est # Bike/Ped	Students 10% (216 in 2027 and 312 in 2032) Other 5% (26 in 2027 and 36 in 2032)

TOTALS:	**2027**	**2032**
Vehicles	**1,992**	**3,141**
Metro	**216**	**348**
Bike/Ped	**216**	**348**

SOURCE: VHB Table from Section 7 of TMP Application to MDOT

THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
PHASE 1
PORTLAND, MAINE

LAND-USE PERMIT SET

OCTOBER 27, 2023

NOT FOR CONSTRUCTION



PROJECT LOCATION MAP

DRAWING INDEX	
SHEET TITLE	SHEET DESCRIPTION
G-000	COVER
G-001	GENERAL NOTES, LEGEND & ABBREVIATIONS
C-001	DEMOLITION PLAN – 1
C-002	DEMOLITION PLAN – 2
C-101	SITE LAYOUT PLAN – 1
C-102	SITE LAYOUT PLAN – 2
C-201	SITE UTILITY PLAN – 1
C-202	SITE UTILITY PLAN – 2
C-301	GRADING & DRAINAGE PLAN – 1
C-302	GRADING & DRAINAGE PLAN – 2
C-303	PLAN INSETS
C-304	LAYOUT, STRUCTURE & PIPE TABLES
D-401	CIVIL DETAILS – 1
D-402	CIVIL DETAILS – 2
D-403	CIVIL DETAILS – 3
D-404	CIVIL DETAILS – 4
D-405	CIVIL DETAILS – 5
D-406	CIVIL DETAILS – 6
D-407	CIVIL DETAILS – 7
E-001	ELECTRICAL LEGEND
E-010	ONE LINE DIAGRAMS
E-101	ELECTRICAL SITE PLAN
E-200	ELECTRICAL DETAILS



SITE LOCATION MAP

SOURCE: USGS TOPO QUADRANGLE

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

Woodard & Curran

LAND-USE PERMIT SET

NOT FOR CONSTRUCTION

Number	Revision	Date

STATE OF MAINE
AMY N. LEBEL
17065
LICENSED
PROFESSIONAL ENGINEER

Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 OCTOBER 2023
Scale	AS NOTED

Drawing Title
COVER

G-000

CIVIL GENERAL NOTES

1. SITE AND TOPOGRAPHIC DATA PROVIDED BY ON THE GROUND SURVEY PERFORMED BY VHB, 500 SOUTHBOROUGH DRIVE, SUITE 105B, SOUTH PORTLAND, MAINE 04106 (207).889.3150. PLAN ENTITLED "EXISTING CONDITIONS SURVEY, RECORD OWNER: THE INITIATIVE FOR DIGITAL ENGINEERING AND LIFT SCIENCE, 1 BEAN POT CIRCLE, CITY OF PORTLAND, COUNTY OF CUMBERLAND, STATE OF MAINE" DATED: 9/15/2023
2. VERTICAL DATUM IS REFERENCED TO CITY DATUM WITH ONE FOOT CONTOUR INTERVALS. CITY DATUM IS +0.02 FT NGVD 1929. HORIZONTAL DATUM IS REFERENCED TO STATE PLANE NAD 1983 (FEET), MAINE WEST ZONE.
3. THE ENTIRE SITE SHALL BE DEVELOPED AND/OR MAINTAINED AS DEPICTED ON THE SITE PLAN. APPROVAL OF THE PLANNING AUTHORITY OR PLANNING BOARD SHALL BE REQUIRED FOR ANY ALTERATION TO OR DEVIATION FROM THE APPROVED SITE PLAN, INCLUDING, WITHOUT LIMITATION: TOPOGRAPHY, DRAINAGE, LANDSCAPING, RETENTION OF WOODED OR LAWN AREAS, ACCESS, SIZE, LOCATION, AND SURFACING OF PARKING AREAS, AND LOCATION AND SIZE OF BUILDINGS.
4. THE CONTRACTOR SHALL CALL "DIG SAFE" AT 811 AT LEAST 72 HOURS PRIOR TO EXCAVATION IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL SAFETY CODES.
5. PROPERLY PROTECT AND DO NOT DISTURB PROPERTY IRONS AND MONUMENTS. IF DISTURBED, THE PROPERTY MONUMENT SHALL BE RESET AT THE CONTRACTOR'S EXPENSE BY A LICENSED LAND SURVEYOR ACCEPTABLE TO THE CITY. PROPERTY MONUMENTS SHALL BE RESET IN ACCORDANCE WITH CITY OF PORTLAND STANDARDS.
6. 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.
7. 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, PORTLAND WATER DISTRICT 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.
8. 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.
9. LAND OUTSIDE THE PROPOSED LIMIT OF WORK SHALL NOT BE DISTURBED BY THE CONTRACTOR. ANY LAND OUTSIDE LIMIT OF WORK DISTURBED BY CONTRACTOR SHALL BE RESTORED BY CONTRACTOR AT NO EXPENSE TO OWNER.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL CONTROL POINTS AND BENCH MARKS NECESSARY FOR THE WORK.
11. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL SAFETY CODES, REGULATIONS, LEGAL REQUIREMENTS, PERMIT CONDITIONS, ETC.
12. THE CONTRACTOR SHALL TAKE ADEQUATE PRECAUTIONS TO PROTECT ALL WALKWAYS, 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.
13. THE CONTRACTOR SHALL PROVIDE ADEQUATE BRACING AND SHORING OF ALL EXCAVATIONS IN ACCORDANCE WITH THE REQUIREMENTS OF ALL GOVERNING CODES AND REGULATIONS.
14. SAWCUTS IN EXISTING PAVEMENT SHALL BE SMOOTH AND STRAIGHT. EXISTING PAVEMENT SHALL BE SAWCUT AND BUTTED TO THE NEW PAVEMENT. NO FEATHERING OF PAVEMENT WILL BE PERMITTED.
15. WORK WITHIN PUBLIC RIGHT-OF-WAY SHALL COMPLY WITH APPLICABLE CITY OF PORTLAND AND STATE REQUIREMENTS.
16. ALL CURB DAMAGED DURING CONSTRUCTION SHALL BE REPLACED IN KIND AND SHALL CONFORM TO CITY OF PORTLAND SPECIFICATIONS. COST IS INCIDENTAL TO CONTRACT.
17. ALL FULL DEPTH PAVEMENT REPLACEMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF PORTLAND TECHNICAL STANDARDS.
18. ALL WORK WITHIN THE RIGHT OF WAY OF CITY STREETS SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY TRAFFIC ENGINEER. THE CONTRACTOR SHALL SUBMIT A PROPOSED TRAFFIC CONTROL PLAN TO THE TRAFFIC ENGINEER AT LEAST 7 DAYS BEFORE BEGINNING CONSTRUCTION IN ANY STREET. THE PROPOSED TRAFFIC CONTROL PLAN SHALL BE SUBJECT TO APPROVAL BY THE TRAFFIC ENGINEER, WHO MAY ATTACH SPECIAL CONDITIONS TO, OR REQUIRE MODIFICATIONS OF, THE TRAFFIC CONTROL PLAN. WORK SHALL NOT BEGIN UNTIL THE PLAN IS APPROVED BY THE TRAFFIC ENGINEER.
19. THE CONTRACTOR SHALL OBTAIN A CITY STREET OPENING PERMIT BEFORE BEGINNING CONSTRUCTION. THE CONTRACTOR WILL ALSO BE REQUIRED TO HAVE A CURRENT EXCAVATOR'S LICENSE IN THE CITY.
20. ALL WORK IN THE PUBLIC R.O.W. SHALL BE COMPLETED IN ACCORDANCE WITH THE CITY'S TECHNICAL MANUAL, ARTICLES VI, VII, AND IX OF CHAPTER 25-STREETS, SIDEWALKS, AND OTHER PUBLIC PLACES OF THE CITY OF PORTLAND CODE OF ORDINANCES.
21. ALL SEWER CONSTRUCTION IN THE PUBLIC WAY SHALL BE COMPLETED IN ACCORDANCE WITH ARTICLE II OF CHAPTER 24-SEWERS OF THE CITY OF PORTLAND CODE OF ORDINANCES.
22. ALL WATER DISTRIBUTION CONSTRUCTION IN THE PUBLIC WAY SHALL BE COMPLETED IN ACCORDANCE WITH PORTLAND WATER DISTRICT STANDARDS.
23. CONTACT CITY OF PORTLAND ARBORIST AND ENGINEER PRIOR TO CUTTING ROOTS, TRIMMING BRANCHES, OR DISTURBING TREES WITHIN THE R.O.W. THAT NOT HAVE BEEN NOTED FOR REMOVAL ON THE PLANS.
24. IF IMPORTED FILL MATERIAL IS REQUIRED, IT SHALL BE CERTIFIED IN WRITING BY CONTRACTOR 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.
25. 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.
26. ALL MATERIAL SHALL BE FURNISHED BY CONTRACTOR UNLESS OTHERWISE NOTED.
27. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF ALL DIMENSIONS PRIOR TO START OF CONSTRUCTION.
28. RESTRICT ACCESS TO SITE THROUGH THE USE OF APPROPRIATE SIGNAGE, BARRIERS, FENCES, ETC. SITE SHALL BE LEFT WITH APPROPRIATE SAFETY MEASURES IN PLACE DURING NON-WORKING HOURS. NO TRENCH SHALL BE LEFT OPEN DURING NON-WORKING HOURS. SITE SAFETY IS THE RESPONSIBILITY OF CONTRACTOR, DURING BOTH WORKING AND NON-WORKING HOURS.
29. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION PERMITS. PERMIT APPLICATIONS SHALL BE SUBMITTED WITH ADEQUATE TIME SO AS NOT TO DELAY CONSTRUCTION.
30. 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. 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. CONTRACTOR SHALL PREPARE AND SUBMIT A NOTICE OF TERMINATION TO THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, UPON COMPLETION OF THE CONSTRUCTION PROJECT. SUBMIT A COPY OF THE INSPECTION RECORDS AND THE NOTICE OF TERMINATION TO THE OWNER AND ARCHITECT. A DRAFT OF THE NOTICE WILL BE PROVIDED TO THE OWNER AND THE OWNER'S REPRESENTATIVE FOR REVIEW PRIOR TO SUBMISSION.
31. THE UTILITY LOCATIONS SHOWN IN PLAN AND PROFILE ARE APPROXIMATE AND REQUIRE FIELD VERIFICATION BY THE CONTRACTOR. CONTACT THE ENGINEER AND OWNER IMMEDIATELY UPON DISCOVERING ANY CONFLICTS WITH EXISTING AND PROPOSED UTILITY LOCATIONS. NOT ALL EXISTING UTILITIES ARE SHOWN ON PLANS.
32. CONTRACTOR SHALL CLEAN AND/OR FLUSH ALL MANHOLES, CATCH BASINS, AND ASSOCIATED PIPING AFTER THE WORK HAS BEEN COMPLETED.
33. CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITY WITH UTILITY COMPANIES, EMERGENCY SERVICES AND CITY. NOTIFY UTILITY COMPANIES WITHIN 48 HOURS OF WORK ACTIVITY ADJACENT TO THOSE UTILITIES.
34. CONTRACTOR SHALL SEQUENCE THE WORK SO AS TO MAINTAIN UTILITY SERVICES FOR EXISTING OPERATIONS ON AND ADJACENT TO THE SITE. CONTRACTOR SHALL PROVIDE A PLAN FOR TEMPORARY UTILITY SERVICES OR AS REQUIRED. THE PLAN SHALL BE STAMPED BY A PROFESSIONAL ENGINEER AND SUBMITTED TO OWNER, ENGINEER AND UTILITY FOR ACCEPTANCE A MINIMUM OF 14 DAYS PRIOR TO START OF UTILITY WORK.
35. EXISTING FACILITIES (I.E. SIGNS, POLES, LIGHT POSTS, 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 CITY AT CONTRACTOR'S EXPENSE.
36. A COMPLETE SET OF "RECORD" DRAWINGS THAT REFLECT ANY AND ALL MODIFICATIONS TO THE SANITARY SEWER SYSTEM, WATER DISTRIBUTION SYSTEM, STORM SEWER SYSTEM AND ANY OTHER UTILITY INSTALLATIONS OR ALTERATIONS WITHIN THE PROJECT LIMITS SHALL BE SUBMITTED TO THE CITY OF PORTLAND. THESE DRAWINGS SHALL BE SUBMITTED IN BOTH DIGITAL (ACAD) AND HARD COPY FORMAT AS DEFINED IN THE SPECIFICATIONS PRIOR TO PAYMENT OF FINAL RETAINAGE.
37. ALL UTILITY SERVICES AND MAINS ARE APPROXIMATE AS SHOWN. CONTRACTOR SHALL FIELD VERIFY LOCATION OF EXISTING SERVICES AND MAINS AND RELOCATE AS REQUIRED TO COMPLETE WORK. CONTRACTOR SHALL COORDINATE WORK WITH THE CITY OF PORTLAND, PORTLAND WATER DISTRICT, UNITIL, CMP, AND ANY OTHER UTILITY OWNERS AND PROPERTY OWNERS.
38. WORK IS PROPOSED IN CLOSE PROXIMITY TO EXISTING UTILITIES. CONTRACTOR SHALL PROTECT EXISTING UTILITIES DURING CONSTRUCTION.
39. CAPPED PIPE STUB LOCATIONS SHALL BE MARKED WITH EMBEDDED STAKE AND A MINIMUM OF THREE TIES SHALL BE RECORDED. EMBEDDED STAKE SHALL BE 2X4 WITH PK NAIL DRIVEN IN TOP, LENGTH AS REQUIRED TO SPAN FROM TOP OF PIPE TO 6" BELOW GRADE. LOCATION AND ELEVATION OF PIPE STUB SHALL BE PROVIDED. WARNING TAPE AND WIRE SHALL BE INSTALLED OVER PIPE STUBS IN ACCORDANCE WITH SPECIFICATIONS.
40. ALL SIGNAGE SHALL CONFORM WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
41. ACTIVITIES THAT HAVE THE POTENTIAL TO DISTURB SOIL SUCH AS UTILITY AND SUBSURFACE STRUCTURE INSTALLATION/RELOCATION WORK, FOUNDATION INSTALLATION, GRADING, PAVING, AND LANDSCAPING SHALL BE CONDUCTED IN ACCORDANCE WITH THE PROJECT 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.
42. ALL NEW BURIED WATER PIPE SHALL HAVE A MINIMUM 5 FEET COVER UNLESS NOTED OTHERWISE OR APPROVED BY THE ENGINEER. BURIED PIPE WITH LESS THAN 4 FEET OF COVER SHALL HAVE A MINIMUM OF 4 INCHES OF RIGID INSULATION WITH AN R-VALUE OF R-20 INSTALL IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
43. WHERE NEW WATER MAINS OF APPURTENANCES ARE TO BE CONNECTED TO EXISTING PIPE, CONTRACTOR SHALL CUT AND REMOVE THE EXISTING PIPE AS NECESSARY TO INSTALL THE NEW WORK. TEST PIT LOCATIONS WHERE NEW MAINS CONNECT TO EXISTING MAINS TO VERIFY PIPE DIAMETER AND MATERIAL TYPE.
44. SOLID SLEEVES ARE SHOWN ON THE DRAWINGS FOR ALL CONNECTIONS TO EXISTING WATER MAIN. IF OUTER DIAMETER OF EXISTING WATER MAIN IS FOUND TO BE GREATER THAN THE MAXIMUM OUTER DIAMETER COMPATIBLE WITH SOLID SLEEVES, CONTRACTOR SHALL INSTALL A COUPLING TO COMPLETE CONNECTION WITH EXISTING WATER MAIN.
45. BACKFLOW PREVENTERS SHALL BE PROVIDED AT ALL BUILDING SANITARY SEWER SERVICE OUTLETS.

CIVIL LEGEND

EXISTING		PROPOSED
	CONTOUR (1' INTERVAL)	
	CONTOUR (INDEX)	
S	SANITARY SEWER	S
SD	STORM DRAIN	SD
UD	UNDERDRAIN	UD
W	WATER LINE	W
E	UNDERGROUND ELECTRIC	
	UNDERGROUND TELECOMMUNICATIONS	
G	GAS LINE	
OE	OVERHEAD ELECTRIC	OE
	PROPERTY LINE	
	EDGE OF VEGETATION	
X X	FENCE	
	RETAINING WALL	
	GRANITE CURB	
	FLUSH CURB	
	SLOPE GRANITE CURB	
	TIPDOWN	
	EDGE OF PAVEMENT	
	EDGE OF GRAVEL	
T T T T T	GUARDRAIL	
	RAILROAD TRACKS	
	ROOF OVERHANG	
	SEDIMENT BARRIER	
LW	LIMIT OF WORK	LW
	SIDEWALK	
	BITUMINOUS PAVEMENT	
	CONCRETE	
	BUILDING FOOTPRINT	

CIVIL LEGEND

EXISTING		PROPOSED
S	SANITARY SEWER MANHOLE	S
CO	CLEAN OUT	CO
D	DRAINAGE MANHOLE	D
	CATCH BASIN	
	AREA DRAIN	
	ELECTRICAL MANHOLE	E
T	TELECOMMUNICATIONS MANHOLE	T
TELE BOX	TELEPHONE STAND BOX	
GM	GAS METER BOX	
	GAS VENT	
	GAS GATE	
	TRANSFORMER	
	UTILITY POLE	
	UTILITY POLE WITH GUY	
	LIGHTPOST	
	WATER GATE VALVE	
	CURB STOP	
	REDUCER	
	SOLID SLEEVE	
	WATER SHUT OFF VALVE	
	HYDRANT	
W	WATER METER BOX	W
	PROPERTY MONUMENT	
MB	MAIL BOX	
	STREET AND MISCELLANEOUS SIGNS	
FP	FLAGPOLE	
XXX.XX	SPOT ELEVATION	XXX.XX
	TREE/SHRUB	
	BOLLARD	
	SECURITY CAMERA	CAM
	BLUE LIGHT INTERCOM	TEL

CIVIL ABBREVIATIONS

&	AND	N.I.C.	NOT IN CONTRACT
A.G.	ABOVE GROUND	NO.	NUMBER
		NR	NO REFUSAL
BC	BOTTOM OF CURB	N.T.S.	NOT TO SCALE
BIT	BITUMINOUS		
BW	BOTTOM OF WALL	OE	OVERHEAD ELECTRIC
B/W	BETWEEN	OH	OVERHEAD
CB	CATCH BASIN	±	PLUS OR MINUS
CI	CAST IRON	LLS	LICENSED LAND SURVEYOR
CMP	CENTRAL MAINE POWER	PROP.	PROPOSED
CMP	CORRUGATED METAL PIPE	PT.	POINT
CONC	CONCRETE	PVC	POLYVINYL CHLORIDE
DI	DUCTILE IRON	R.O.W.	RIGHT-OF-WAY
DIA.	DIAMETER	RCP	REINFORCED CONCRETE PIPE
DMH	DRAIN MANHOLE	REINF.	REINFORCED
DTL.	DETAIL	REQ'D	REQUIRED
E	UNDERGROUND ELECTRICAL	S	SLOPE (FT./FT.)
EL.	ELEVATION	S	SEWER
E.O.P.	EDGE OF PAVEMENT	SD	STORM DRAIN
EXIST.	EXISTING	SMH	SEWER MANHOLE
		SCH	SCHEDULE
FF	FINISH FLOOR	STA.	STATION
FM	FORCEMAIN		
FT	FOOT/FEET	TS	TOP OF STAIRS
		TW	TOP OF WALL
G	GAS MAIN	TYP.	TYPICAL
GS	GAS SERVICE		
GALV.	GALVANIZED	UP	UTILITY POLE
GRAN.	GRANITE		
		VC	VITRIFIED CLAY
HDPE	HIGH DENSITY POLYETHYLENE	VIT.	VITRIFIED CLAY
HYD	HYDRANT		
		W	WEST
INV.	INVERT	W	WATER
		W/	WITH
LF	LINEAR FEET	W	WATERMAIN
		WS	WATER SERVICE
MAX.	MAXIMUM	WV	WATER VALVE
MDOT	MAINE DEPARTMENT OF TRANSPORTATION		
MIN.	MINIMUM		
MON	MONUMENT		



OVERALL & INDEX SITE PLAN
SCALE: 1"=80'

80' 0 80' 160'
BAR SCALE
1" = 80'
CHECK GRAPHIC SCALE BEFORE USING

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STATE OF MAINE
AMY N. LEBEL
17065
LICENSED
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Drawing Title
GENERAL NOTES, LEGEND & ABBREVIATIONS

G-001

DEMOLITION NOTES:

1. SEQUENCE OF WORK WILL FOLLOW THE CONSTRUCTION MANAGEMENT PLAN. DEMOLITION ACTIVITIES SHALL BE SEQUENCED TO ENSURE AREAS OF THE SITE SHALL REMAIN OPERATIONAL DURING CONSTRUCTION.
2. 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.
3. THE WORD "DEMOLISH" SHALL IMPLY THE FULL REMOVAL AND PROPER DISPOSAL OF THE ITEM AND ANY APPURTENANT ITEMS, AS NOTED, OR AS DIRECTED BY THE OWNER OR THEIR REPRESENTATIVE. THE OWNER RETAINS THE RIGHT TO KEEP ANY ITEM NOTED FOR REMOVAL OR DEMOLITION AT THE REQUEST OF THE OWNER OR THEIR REPRESENTATIVE.
4. 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 MADE AVAILABLE TO THE SITE/CIVIL ENGINEER AND THE CITY OF PORTLAND UPON REQUEST.
5. 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 ENGINEER IN WRITING OF THE CONFLICT. FOR ANY UTILITY PIPES OF STRUCTURES FOUND THAT ARE NOT ON THE EXISTING PLAN OR ARE IN LOCATIONS THAT VARY FROM WHAT IS SHOWN, CONTRACTOR SHALL PROVIDE RECORD LOCATIONS.
6. LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THE DRAWINGS ARE APPROXIMATE, AND NOT ALL UTILITY PIPING IS SHOWN. CONTRACTOR SHALL WORK WITH OWNER AND ENGINEER PRIOR TO STARTING ANY EXCAVATION TO DEVELOP AN INVESTIGATION PLAN TO DETERMINE LOCATIONS OF EXISTING FUEL LINES, DOMESTIC AND FIRE WATER LINES, ELECTRICAL DUCT BANKS, SITE SEWER LINES, AND THE PORTLAND WATER DISTRICT SANITARY SEWER FORCEMAIN IN THE VICINITY OF THE WORK AREA.
7. 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, THE CITY OF PORTLAND AND APPLICABLE UTILITY.
8. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE A MAINTENANCE AND PROTECTION OF TRAFFIC (MPT) PLAN IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REQUIREMENTS.
9. 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.
10. ALL SITE FEATURES OUTSIDE LIMIT OF WORK AND NOT DESIGNATED FOR DEMOLITION SHALL BE PROTECTED.
11. WORK SHALL REMAIN WITHIN THE DEFINED LIMITS OF WORK. DEMOLITION WORK WILL NOT IMPACT PRIOR PHASES OF WORK ON THE SITE UNLESS OTHERWISE NOTED ON THESE PLANS.
12. CONTRACTOR SHALL REPAIR OR REPLACE ANY STRUCTURES OR UTILITIES DAMAGED DURING DEMOLITION WORK. THE CONTRACTOR SHALL PROCEED WITH CAUTION WITHIN THE PROPOSED WORK AREA TO PREVENT ANY INTERRUPTION TO EXISTING UTILITY SERVICE UNLESS OTHERWISE COORDINATED WITH THE OWNER.
13. CONTRACTOR SHALL REMOVE AND REUSE EXISTING FENCING ON THE SITE AS IS POSSIBLE. PRIOR TO START OF WORK, CONTRACTOR SHALL REVIEW ALL FENCING WITH OWNER AND ENGINEER TO CONFIRM DEMOLITION OR REUSE. SEE EXHIBIT INCLUDED IN THE SPECIFICATIONS FOR FURTHER INFORMATION ON THE EXISTING FENCING.
14. FOR ALL ELECTRICAL DEMOLITION IDENTIFIED ON THESE PLANS, THE CONTRACTOR SHALL ALSO REVIEW WITH THE PROJECT ELECTRICAL DRAWINGS, AND COORDINATE WITH CENTRAL MAINE POWER AS REQUIRED.
15. TREES WITHIN THE LIMITS OF WORK THAT ARE NOT DESIGNATED AS BEING PROTECTED SHALL BE DEMOLISHED. CONTRACTOR SHALL COMPLY WITH SECTION 4.3 AND CHAPTER 4 FIGURE IV OF THE CITY OF PORTLAND TECHNICAL MANUAL FOR LANDSCAPE PRESERVATION.
16. ALL PERIMETER AND SECURITY FENCING ON THE PROJECT PARCEL SHALL BE DEMOLISHED UNLESS OTHERWISE INDICATED. CONTRACTOR SHALL VERIFY PROPERTY LIMITS PRIOR TO FENCE DEMOLITION.
17. DEMOLITION OF UTILITY POLES, METERS, AND EQUIPMENT SHALL BE SEQUENCED WITH NEW WORK TO ENSURE CONTINUED ELECTRICAL SERVICE TO UTILITY CUSTOMERS.
18. DEMOLISH ALL PAVEMENT, CURB, SIDEWALK AND GUARDRAIL WITHIN THE LIMIT OF WORK UNLESS OTHERWISE INDICATED.

SHEET LEGEND

- XXXXXXXXXXXXXXXXX — UTILITY LINE DEMOLITION
- CATCH BASIN INLET PROTECTION
- SEDIMENT BARRIER
- STRUCTURE DEMOLITION
- TREE DEMOLITION

INSET A

MATCHLINE SEE INSET A

MATCHLINE SEE SHEET C-002

MATCHLINE SEE SHEET C-002

BAR SCALE
1" = 20'
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Drawing Title
DEMOLITION PLAN - 1

C-001

MATCHLINE SEE SHEET C-001

MATCHLINE SEE SHEET C-001

DEMOLITION OF OVERHEAD SERVICE WITH TRANSFORMERS SHALL BE SEQUENCED WITH NEW WORK TO ENSURE CONTINUED SERVICE TO CUSTOMERS

DEMOLISH HYDRANT

LIMITS OF PREVIOUSLY DEMOLISHED BUILDING; REMNANT FOUNDATION MAY REMAIN

SALVAGE RAILS

DEMOLISH HYDRANT

DEMOLISH CONCRETE PAD

TOP OF FRAME = 17.82' COVER NOT REMOVABLE AT TIME OF SURVEY

APPROXIMATE LOCATION OF ELECTRICAL POLE TO BE DEMOLISHED

TOP OF FRAME = 14.93'
TOP OF PIPE = 11.3' (6" CAST?)
TOP OF SILT = 10.9'±
OTHER FEATURES NOT VISIBLE

TOP OF FRAME = 15.00' COVER NOT REMOVABLE AT TIME OF SURVEY

DEMOLISH HYDRANT

DEMOLISH WATER SERVICE

APPROXIMATE LOCATION OF UTILITY METER TO BE DEMOLISHED

DEMOLISH FLAG POLE & ASSOCIATED LIGHT FIXTURES & CONDUIT

APPROXIMATE LOCATION OF ELECTRICAL POLE TO BE DEMOLISHED

TOP OF FRAME = 17.60' FULL OF WATER FEATURES NOT VISIBLE

APPROXIMATE LOCATION OF OVERHEAD TELECOM UTILITIES TO BE DEMOLISHED

DEMOLISH SIGN

DEMOLISH GAS SERVICE

DEMOLISH HYDRANT

DEMOLISH TREE, TYP.

DEMOLISH CONCRETE PAD

MATCHLINE SEE INSET A

DEMOLISH CONCRETE WALL

TOP OF FRAME = 11.21' FL/ = 2.5' (12" PVC)

DEMOLISH TREE, TYP.

DEMOLISH STAIR

DEMOLISH STACK FOUNDATION

FORMER BRICK STACK

DEMOLISH RETAINING WALL

PRESERVE & PROTECT BUILDING TO REMAIN

DEMOLISH CONCRETE PAD

DEMOLISH CHAINLINK FENCE

DEMOLISH TRANSFORMER

10" PVC = INV = 0.8' CONNECTION COULD NOT BE DETERMINED AT THE TIME OF SURVEY

12" PVC INV = 1.5'

TOP OF FRAME = 8.84' INV A = 3.3' (12" PVC) INV B = 5.0' (12" PVC) INV C = 2.8 (12" PVC)

TOP OF FRAME = 8.7' FL/ = 3.2' (12" PVC)

TOP OF FRAME = 9.3' INV A = 4.4' (12" PVC) INV B = 4.8' (6" PVC) INV C = 4.7 (6" PVC) INV D = 4.8' (6" PVC)

TOP OF FRAME = 9.30' FL/ = 5.7' (6" PVC)

LIMITS OF PREVIOUSLY DEMOLISHED BUILDING; REMNANT FOUNDATION MAY REMAIN

TOP OF FRAME = 9.55' INV A = 6.4' (6" PVC) INV B = 6.4' (6" PVC) SUMP = 3.4'

TOP OF FRAME = 9.12' INV = 5.7' (12" PVC)

TOP OF FRAME = 9.63' INV A = 4.1' (10" PVC) INV B = 4.1' (10" PVC) INV C = 3.8' (12" PVC)

TOP OF FRAME = 10.34' INACCESSIBLE AT TIME OF SURVEY

PERIMETER BARRIER, TYP.

APPROXIMATE FLOOD ZONE LINE BY ELEVATION (EL. 9)

APPROXIMATE FEMA FLOOD ZONE LINE

TOP OF FRAME = 8.25' INV A = 3.2' (8" PVC) INV B = 3.4' (12" PVC) INV C = 3.0 (8" PVC)

DEMOLISH BUILDING FOUNDATION

GUARD RAIL

CONCRETE WHARF

BUILDING

MATCHLINE SEE INSET B

INSET B

DEMOLISH BUILDING FOUNDATION

CONCRETE WHARF

DEMOLISH BUILDING & PIER

NOTES:
1. REFER TO SHEET C-001 FOR GENERAL DEMOLITION NOTES AND DEMOLITION LEGEND.

20' 0 20' 40'
BAR SCALE 1" = 20'
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17065
LICENSED
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Drawing Title

DEMOLITION PLAN - 2

C-002

NOTES:
1. SEE LANDSCAPE PLANS FOR SITE SURFACE MATERIAL ASSOCIATED WITH LANDSCAPED AREAS, PATIOS, AND NON-BITUMINOUS WALKWAYS & ROADWAYS, PLANTING PLANS AND SITE FURNISHINGS.
2. UTILITY AND DRAINAGE STRUCTURES NOT SHOWN FOR CLARITY, SEE GRADING AND DRAINAGE AND UTILITY PLAN FOR MORE INFORMATION.
3. REFER TO SHEET C-304 FOR LINE AND CURVE LAYOUT DATA.

REFER TO CIVIL PLANS BY VHB FOR SHERWOOD STREET DESIGN
CONCRETE SIDEWALK, TYP.
PEDESTRIAN RAMP, TYP.
BIKE LANE STRIPING PER CITY OF PORTLAND TECHNICAL MANUAL
DOUBLE YELLOW CENTERLINE STRIPE, TYP.
FLUSH GRANITE CURB, TYP.
CROSSWALK, TYP.
VERTICAL GRANITE CURB, TYP.
PWD SEWER EASEMENT
STOP SIGN, TYP.
STOP BAR, TYP.
LIMIT OF WORK
PROPERTY BOUNDARY, TYP.
4" LOAM & SEED, TYP.
SIDEWALK RAMP DETECTABLE WARNING, TYP.
STOP SIGN, TYP.
STOP BAR, TYP.
CONCRETE PAD, TYP.
CONCRETE SIDEWALK, TYP.
PWD SEWER EASEMENT
BITUMINOUS PAVEMENT, TYP.
TREE, TYP. SEE LANDSCAPE PLANS
VEHICULAR PRECAST CONCRETE PAVERS, TYP. SEE LANDSCAPE PLANS
DO NOT ENTER SIGN, TYP.
5'X8' STANDARD PAD-MOUNTED BUS SHELTER (2) MIN 2'-8" OPENING FOR EACH
TIPDOWN, TYP.
STOP BAR, TYP.
STOP SIGN, TYP.
FLUSH GRANITE CURB, TYP.
ONE WAY AND ROUNDABOUT SIGN, TYP.
TIMBER GUARDRAIL, TYP. SEE LANDSCAPE PLANS
4" LOAM & SEED, TYP.
ARCHITECTURAL CONCRETE RETAINING WALL, SEE STRUCTURAL PLANS
VEHICULAR ASPHALT PAVING, TYP. SEE LANDSCAPE PLANS
ACCESSIBLE PARKING SPACE, TYP.
ONE WAY SIGN, TYP.
4" LOAM & SEED, TYP.
CURB STOP, TYP.
ACCESSIBLE PARKING SPACE SIGN (MUTCD R7-8), TYP. AT MARKED ACCESSIBLE SPACES
MOUNTABLE GRANITE CURB, TYP.
BIKE RACK, TYP. SEE LANDSCAPE PLANS
PARKING GARAGE
MATCHLINE SEE INSET A, SHT. C-303
MATCHLINE SEE SHEET C-102
MATCHLINE SEE SHEET C-102

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

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STATE OF MAINE
AMY N. LEBEL
17065
LICENSED PROFESSIONAL ENGINEER

Stamp

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Drawn By	BCM
Designed By	ANL
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Date	27 OCTOBER 2023
Scale	1"=20'

Drawing Title
SITE LAYOUT PLAN - 1

C-101

MATCHLINE SEE SHEET C-101

MATCHLINE SEE SHEET C-101

PARKING GARAGE

DAY CARE CENTER

BEAN BUILDING

LEARNING RESEARCH & COLLABORATION BUILDING

MATCHLINE SEE INSET A, SHT. C-303

MATCHLINE SEE INSET B, SHT. C-303

DO NOT ENTER SIGN, TYP.

ONE WAY AND ROUNDABOUT SIGN, TYP.

ONE WAY SIGN, TYP.

PEDESTRIAN RAMP, TYP.

CROSSWALK, TYP.

AUTHORIZED VEHICLES ONLY SIGN, TYP.

ACCESSIBLE PARKING SPACE, TYP.

SIDEWALK RAMP DETECTABLE WARNING, TYP.

VEHICULAR GATE WITH KNOX LOCKBOX, TYP.

ACCESSIBLE PARKING SPACE SIGN (MUTCD R7-8), TYP. AT MARKED ACCESSIBLE SPACES

CURB STOP, TYP.

FLUSH GRANITE CURB, TYP.

VERTICAL GRANITE CURB, TYP.

BITUMINOUS PAVEMENT, TYP.

CONCRETE SIDEWALK, TYP.

TIPDOWN, TYP.

PEDESTRIAN GATE, TYP.

FENCE, TYP.

PWD SEWER EASEMENT

BENCH, TYP. SEE LANDSCAPE PLANS

BOLLARD, TYP. SEE LANDSCAPE PLANS

GRANITE COBBLESTONE PAVERS, TYP. SEE LANDSCAPE PLANS

TREE, TYP. SEE LANDSCAPE PLANS

VEHICULAR CONCRETE PAVEMENT, TYP. SEE LANDSCAPE PLANS

4" LOAM & SEED, TYP.

BIKE RACK, TYP. SEE LANDSCAPE PLANS

VEHICULAR GRANITE PAVERS, TYP. SEE LANDSCAPE PLANS

STAIR, TYP. SEE LANDSCAPE PLANS

STONE RETAINING WALL, TYP. SEE LANDSCAPE PLANS

VEHICULAR GRANITE PAVERS, TYP. SEE LANDSCAPE PLANS

VEHICULAR PRECAST CONCRETE PAVERS, TYP. SEE LANDSCAPE PLANS

ROOF OVERHANG

SEE LANDSCAPE PLANS FOR ROOF LANDSCAPING

SEE LANDSCAPE PLAN FOR MORE DETAIL ON SURFACE MATERIALS

ARCHITECTURAL CONCRETE RETAINING WALL, TYP. SEE LANDSCAPE PLANS

STONE RETAINING WALL, TYP. SEE LANDSCAPE PLANS

RAMP TO LOADING DOCK

MOUNTABLE GRANITE CURB, TYP.

VEHICULAR GRANITE PAVERS, TYP. SEE LANDSCAPE PLANS

VEHICULAR ASPHALT PAVING, TYP. SEE LANDSCAPE PLANS

TIMBER GUARDRAIL, TYP., SEE LANDSCAPE PLANS

ARCHITECTURAL CONCRETE RETAINING WALL, TYP.

ROOF OVERHANG, TYP.

PROPERTY BOUNDARY, TYP.

LIMIT OF WORK, TYP.

APPROXIMATE FLOOD ZONE LINE BY ELEVATION (EL. 9)

APPROXIMATE FEMA FLOOD ZONE LINE

APPROXIMATE FLOOD ZONE LINE BY ELEVATION

EXISTING PIERS

ZONE AE (EL. 9)

INTERTIDAL ZONE

MEAN TIDE (0)

HAT (7.39')

MHW (6.30')

MLW (0.30')

NOTES:
1. REFER TO SHEET C-101 FOR GENERAL SITE LAYOUT PLAN NOTES.
2. REFER TO SHEET C-304 FOR LINE AND CURVE LAYOUT DATA.

20' 0 20' 40'
BAR SCALE
1" = 20'
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SITE LAYOUT PLAN - 2

C-102

REFER TO CIVIL PLANS BY VHB FOR SHERWOOD STREET DESIGN

OVERHEAD ELECTRICAL, TYP., SEE ELECTRICAL PLANS

UTILITY POLE, TYP. SEE ELECTRICAL PLANS

SHERWOOD STREET

CONNECT TO EXISTING WATER MAIN WITH 12" SOLID SLEEVE, COORDINATE WITH PWD

12" GATE VALVE & BOX

HYDRANT ASSEMBLY, TYP.

PWD SEWER EASEMENT

ELECTRIC VAULT, TYP., SEE ELECTRICAL PLANS

UNDERGROUND ELECTRICAL, TYP., SEE ELECTRICAL PLANS

CONNECT TO EXISTING WATER MAIN WITH 12" SOLID SLEEVE, COORDINATE WITH PWD

12" GATE VALVE & BOX

12"X12" DI TEE

12" 45 DI BEND

12" GATE VALVE & BOX

6'X6' WATER METER PIT

PAD-MOUNTED RPZ WITH ENCLOSURE

12" GATE VALVE & BOX

INTERSTATE 295 SOUTH

INTERSTATE 295 NORTH

SECURITY CAMERA AND BLUE LIGHT INTERCOM, TYP.

PWD SEWER EASEMENT

SECURITY CAMERA, TYP.

LIGHT POLE, TYP. SEE ELECTRICAL PLANS

RAILROAD

HYDRANT ASSEMBLY, TYP.

HYDRANT ASSEMBLY, TYP.

PARKING GARAGE

BELOW-GRADE STORMWATER TREATMENT

4'X8' GREASE INTERCEPTOR

MATCHLINE SEE INSET A, SHT. C-303

MATCHLINE SEE SHEET C-202

MATCHLINE SEE SHEET C-202

20' 0 20' 40'
BAR SCALE
1" = 20'
CHECK GRAPHIC SCALE BEFORE USING

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SITE UTILITY PLAN - 1

C-201

MATCHLINE SEE SHEET C-201

MATCHLINE SEE SHEET C-201

PARKING GARAGE

DAY CARE CENTER

BEAN BUILDING

LEARNING RESEARCH & COLLABORATION BUILDING

6" FIRE PROTECTION SERVICE
2" DOMESTIC WATER SERVICE
6" SANITARY INV OUT=16.00
6" SANITARY INV OUT=9.33
6" FIRE PROTECTION SERVICE
2" DOMESTIC WATER SERVICE
OIL/WATER SEPARATOR VENT OUTLET
CAP FOR FUTURE CONNECTION 12" PVC INV=10.11
END CAP
BELOW-GRADE STORMWATER TREATMENT
ADJUST STRUCTURE RIM TO GRADE
SECURITY CAMERA AND BLUE LIGHT INTERCOM, TYP.
MATCH EXISTING INVERT, CONNECT NEW PIPE TO EXISTING STRUCTURE 12" PVC INV IN= 1.3 PROVIDE BACKFLOW PREVENTER
PWD SEWER EASEMENT
SURFACE STORMWATER TREATMENT SYSTEM
UNDERGROUND ELECTRICAL, TYP., SEE ELECTRICAL PLANS
4" DOMESTIC WATER SERVICE
6" FIRE PROTECTION SERVICE
6" SANITARY INV OUT=5.7
2" BLOW-OFF VALVE AND THRUST BLOCK
HYDRANT ASSEMBLY, TYP.
OIL/WATER SEPARATOR VENT OUTLET
4'X6' GREASE INTERCEPTOR
8'x14' SUBSURFACE EMERGENCY FUEL TANK
ELECTRIC VAULT, TYP., SEE ELECTRICAL PLANS
6" SANITARY INV OUT = 17.83
6" SANITARY INV OUT = 17.69
ELECTRIC HAND HOLE, TYP., SEE ELECTRICAL PLANS
8" SANITARY INV OUT=14.97
6" DOMESTIC WATER SERVICE
8" FIRE PROTECTION SERVICE
8" FIRE PROTECTION SERVICE
END CAP
SECURITY CAMERA, TYP.
8" SANITARY INV OUT=13.66 (2)
APPROXIMATE FLOOD ZONE LINE BY ELEVATION (EL. 9)
APPROXIMATE FEMA FLOOD ZONE LINE

MATCHLINE SEE INSET A, SHT C-303

MATCHLINE SEE INSET B, SHT. C-303

EXISTING PIERS
INTERTIDAL ZONE
MEAN TIDE (0)
HAT (7.39')
MHHW (6.56')
MHW (6.30')
MLW (-0.39')
MLLW (-0.52')

NOTE:
1. REFER TO SHEET C-304 FOR SANITARY SEWER PIPE AND STRUCTURE TABLES.

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

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

Woodard & Curran

LAND-USE PERMIT SET

NOT FOR CONSTRUCTION

Number	Revision	Date

STATE OF MAINE
AMY N. LEBEL
17065
LICENSED
PROFESSIONAL ENGINEER

Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 OCTOBER 2023
Scale	1"=20'

Drawing Title
SITE UTILITY PLAN - 2

C-202

NOTE:
1. REFER TO SHEET C-304 FOR DRAINAGE PIPE AND STRUCTURE TABLES.

REFER TO CIVIL PLANS BY VHB FOR SHERWOOD STREET DESIGN

MATCH EXISTING SD INVERTS

CB1

DOG HS MH 1

MATCH EXISTING SD INVERTS

CB2

DOG HS MH 2

PWD SEWER EASEMENT

PWD SEWER EASEMENT

MATCHLINE SEE INSET A, SHT. C-303

PARKING GARAGE

MATCHLINE SEE SHEET C-302

MATCHLINE SEE SHEET C-302

CB11

DMH4

CB23

CB24

DMH29

DMH3

CB8

DMH5

FI1

FI2

FI3

CB7

CB3

CB4

DMH28

DMH1

DMH45

DMH2 (DIV.)

DIVERSION MANHOLE, TYP. FOR ALL STRUCTURES NOTED (DIV.)

12" INV IN = 16.85

12" INV IN = 16.85

SUBSURFACE SAND FILTER

CB10

DMH8

DMH21

DMH20

DMH17

DMH11

A02

A03

A06

CURB BREAK, TYP.

PERIMETER SEDIMENT BARRIER

4'-0" GRADE DIFFERENTIAL

BAR SCALE
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Checked	DLC
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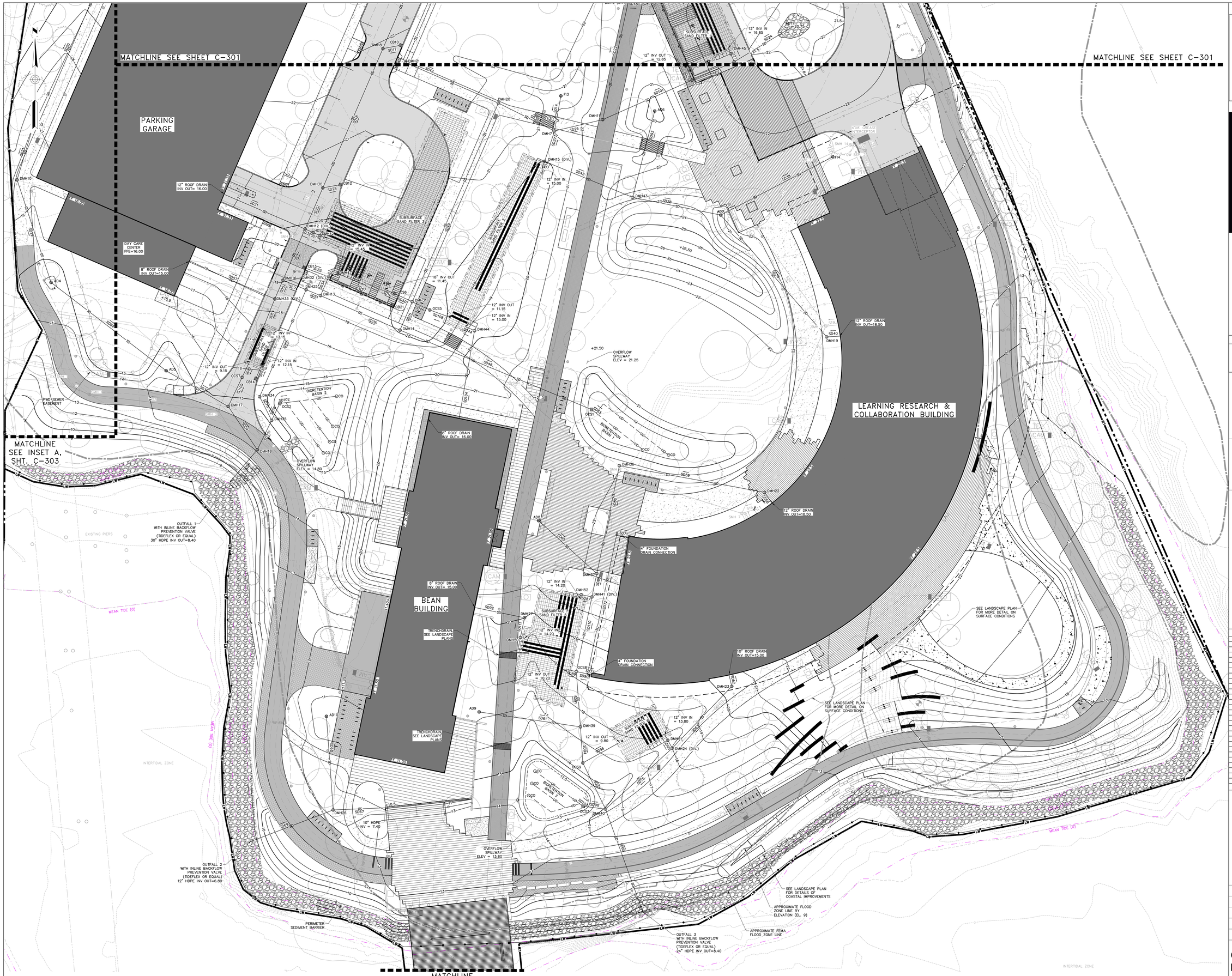
Scale	1"=20'

Drawing Title
GRADING & DRAINAGE PLAN - 1

C-301



NOTE:
1. REFER TO SHEET C-304 FOR DRAINAGE PIPE AND STRUCTURE TABLES.

BAR SCALE
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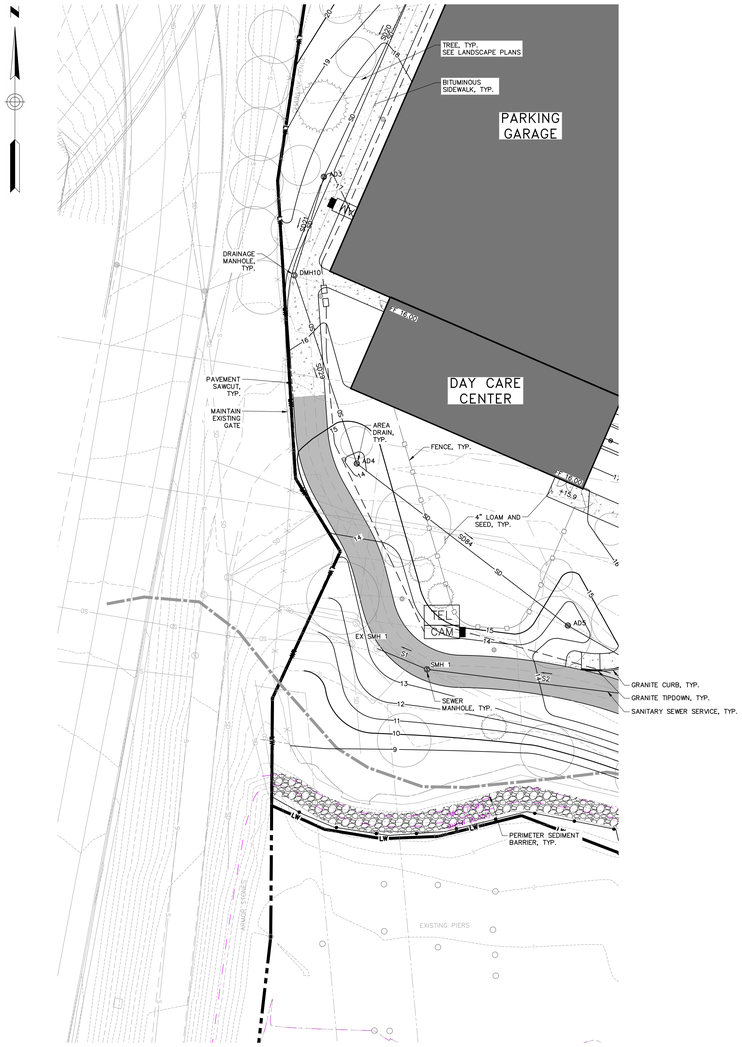
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 OCTOBER 2023
Scale	1"=20'

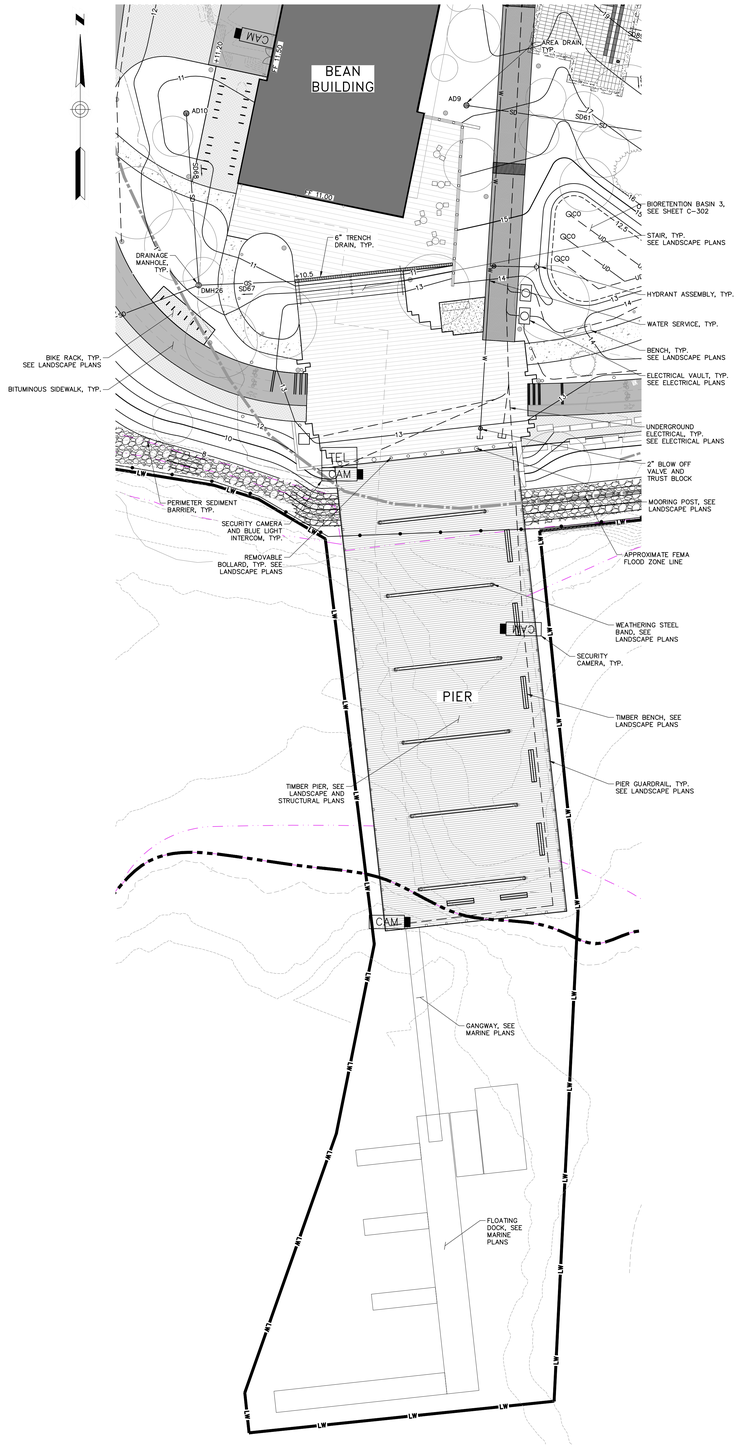
Drawing Title

GRADING & DRAINAGE PLAN - 2

C-302



INSET A



INSET B

NOTE:
1. REFER TO SHEET C-304 FOR SANITARY SEWER AND STORMWATER DRAINAGE STRUCTURE AND PIPE TABLES.

20' 0 20' 40'
BAR SCALE
1" = 20'
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PROFESSIONAL ENGINEER

Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 OCTOBER 2023
Scale	1"=20'

Drawing Title
PLAN INSETS

C-303

LAYOUT DATA – SHEET C–101 & C–102

LINE LAYOUT DATA

Line #	Length	Direction	START NORTHING	START EASTING	END NORTHING	END EASTING
L1	37.23	S23° 23' 22.07"W	308428.31	2929642.18	308394.14	308394.14
L2	108.87	N23° 38' 38.32"W	308328.65	2929718.85	308428.38	308428.38
L3	2.61	N3° 31' 51.46"E	308302.91	2929722.80	308305.52	308305.52
L4	6.11	N66° 26' 01.46"E	308266.27	2929693.26	308268.71	308268.71
L5	81.96	S23° 38' 40.60"E	308354.24	2929627.49	308279.16	308279.16
L6	124.86	S23° 38' 38.32"E	308449.04	2929692.35	308334.66	308334.66
L7	119.85	S23° 38' 40.60"E	308644.91	2929622.42	308535.12	308535.12
L8	179.23	S55° 17' 21.81"E	308836.64	2929401.25	308734.58	308734.58
L9	1.47	S66° 38' 16.59"E	308166.05	2929389.55	308165.47	308165.47
L10	25.43	S23° 23' 55.71"W	308215.69	2929389.22	308192.35	308192.35
L11	1.47	N66° 36' 04.29"W	308225.52	2929416.87	308226.11	308226.11
L12	25.43	N23° 24' 16.45"E	308175.88	2929417.18	308199.22	308199.22
L13	45.37	N66° 26' 01.46"E	308210.02	2929664.37	308228.16	308228.16
L14	65.46	S23° 34' 05.14"E	308270.02	2929638.19	308210.02	308210.02
L15	18.03	N66° 21' 19.40"E	308262.79	2929621.68	308270.02	308270.02
L16	73.00	S23° 38' 40.60"E	308329.67	2929592.40	308262.79	308262.79
L17	13.00	S66° 21' 19.40"W	308334.88	2929604.31	308329.67	308329.67
L18	27.12	S23° 38' 40.60"E	308366.31	2929596.01	308341.47	308341.47
L19	32.29	S12° 15' 38.07"W	308397.86	2929602.87	308366.31	308366.31
L20	116.20	S23° 23' 22.07"W	308504.52	2929649.00	308397.86	308397.86
L21	100.71	S23° 38' 40.60"E	308616.73	2929608.56	308524.47	308524.47
L22	377.86	N23° 23' 55.71"E	308269.84	2929412.65	308616.63	308616.63
L23	6.47	N66° 36' 04.29"W	308247.55	2929426.40	308250.12	308250.12
L24	87.95	N23° 24' 16.45"E	308108.97	2929414.37	308189.69	308189.69
L25	0.50	S23° 24' 32.18"W	308128.10	2929371.44	308127.65	308127.65
L26	47.00	N66° 35' 27.82"W	308109.43	2929414.57	308128.10	308128.10
L27	13.01	S23° 24' 16.45"W	308140.04	2929376.61	308128.10	308128.10
L28	3.67	S66° 38' 16.59"E	308148.08	2929370.63	308146.62	308146.62
L29	87.98	N23° 27' 50.30"E	308062.17	2929322.46	308142.88	308142.88
L30	48.29	N66° 36' 04.30"W	308162.54	2929340.94	308181.72	308181.72
L31	6.12	N23° 23' 55.70"E	308150.35	2929341.11	308155.97	308155.97
L32	83.92	N23° 27' 50.30"E	308073.37	2929307.70	308150.35	308150.35
L33	29.39	S23° 23' 55.70"W	308432.89	2929331.57	308405.92	308405.92
L34	85.17	N66° 36' 04.29"W	308406.88	2929429.46	308440.70	308440.70
L35	16.41	N23° 23' 55.71"E	308372.09	2929430.75	308387.16	308387.16
L36	8.59	N68° 23' 55.71"E	308366.27	2929420.02	308369.43	308369.43
L37	61.88	N23° 23' 55.71"E	308306.82	2929392.70	308363.60	308363.60
L38	8.58	N21° 37' 22.26"W	308295.01	2929395.80	308302.99	308302.99
L39	10.68	N23° 23' 55.71"E	308281.38	2929391.50	308291.18	308291.18
L40	8.59	N68° 23' 55.71"E	308275.56	2929380.77	308278.72	308278.72
L41	61.86	N23° 23' 55.71"E	308216.12	2929353.45	308272.90	308272.90
L42	8.59	N21° 36' 04.29"W	308204.32	2929356.55	308212.30	308212.30
L43	32.50	S66° 36' 04.30"E	308205.59	2929306.94	308192.68	308192.68
L44	48.39	S23° 23' 55.70"W	308467.80	2929298.74	308423.39	308423.39
L45	124.17	N66° 36' 04.29"W	308428.91	2929438.99	308478.22	308478.22
L46	252.85	S23° 23' 55.71"W	308668.77	2929559.13	308436.71	308436.71
L47	199.78	S55° 17' 21.81"E	308813.01	2929386.20	308699.25	308699.25

CURVE LAYOUT DATA

Curve #	Length	Radius	Delta	Chord Direction	Chord Length	START NORTHING	START EASTING	END NORTHING	END EASTING
C1	41.77	18.00	132.97	S89° 52' 22"W	33.01	308428.38	2929675.19	308428.31	2929642.18
C2	23.71	50.00	27.17	N10° 03' 23"W	23.49	308305.52	2929722.96	308328.65	2929718.85
C3	43.91	40.00	62.90	N34° 58' 56"E	41.74	308268.71	2929698.86	308302.91	2929722.80
C4	39.24	25.00	89.92	S68° 36' 20"E	35.33	308279.16	2929660.36	308266.27	2929693.26
C5	41.04	50.00	47.03	S0° 07' 39"E	39.90	308394.14	2929627.40	308354.24	2929627.49
C6	56.59	169.47	19.13	N14° 51' 22"W	56.33	308218.49	2929773.30	308272.93	2929758.86
C8	64.07	200.00	18.35	S14° 28' 00"E	63.80	308334.66	2929742.42	308272.89	2929758.36
C9	17.07	48.00	20.38	S33° 50' 03"E	16.98	308463.15	2929682.89	308449.04	2929692.35
C10	29.28	30.00	55.93	S16° 03' 39"E	28.13	308490.18	2929675.11	308463.15	2929682.89
C11	45.91	74.00	35.55	S5° 52' 15"E	45.18	308535.12	2929670.49	308490.18	2929675.11
C12	117.64	213.00	31.64	S39° 28' 01"E	116.15	308734.58	2929548.59	308644.91	2929622.42
C13	31.40	20.00	89.96	N68° 23' 00"E	28.27	308165.47	2929390.90	308175.88	2929417.18
C14	31.43	20.00	90.04	S21° 37' 10"E	28.29	308192.35	2929379.12	308166.05	2929389.55
C15	31.42	20.00	90.00	S68° 23' 56"W	28.28	308226.11	2929415.52	308215.69	2929389.22
C16	31.42	20.00	90.01	N21° 35' 54"W	28.29	308199.22	2929427.28	308225.52	2929416.87
C17	17.59	207.97	4.85	S21° 09' 39"E	17.58	308216.26	2929732.89	308199.86	2929739.24
C18	33.10	20.00	94.83	S66° 09' 08"E	29.45	308228.16	2929705.95	308216.26	2929732.89
C19	7.85	5.00	90.00	S21° 21' 19"W	7.07	308341.47	2929606.88	308334.88	2929604.31
C20	20.52	25.00	47.03	S0° 07' 39"E	19.95	308524.47	2929648.95	308504.52	2929649.00
C21	58.01	25.00	132.96	N89° 52' 38"E	45.85	308616.63	2929562.71	308616.73	2929608.56
C22	23.56	15.00	90.00	N21° 36' 04"W	21.21	308250.12	2929420.46	308269.84	2929412.65
C23	69.12	44.00	90.01	N21° 35' 54"W	62.23	308189.69	2929449.31	308247.55	2929426.40
C24	7.86	5.00	90.04	S21° 37' 00"E	7.07	308146.62	2929374.00	308140.04	2929376.61
C25	15.69	10.00	89.90	N68° 24' 47"E	14.13	308142.88	2929357.49	308148.08	2929370.63
C26	47.84	40.00	68.53	N10° 47' 59"W	45.04	308017.93	2929330.90	308062.17	2929322.46
C27	7.85	5.00	90.00	N21° 36' 04"W	7.07	308155.97	2929343.54	308162.54	2929340.94
C28	53.43	40.50	75.58	N61° 15' 19"E	49.64	308049.50	2929264.18	308073.37	2929307.70
C29	23.56	15.00	90.00	S68° 23' 56"W	21.21	308440.70	2929351.30	308432.89	2929331.57
C30	23.56	15.00	90.00	N21° 36' 04"W	21.21	308387.16	2929437.27	308406.88	2929429.46
C31	3.93	5.00	45.00	N45° 53' 56"E	3.83	308369.43	2929428.00	308372.09	2929430.75
C32	3.93	5.00	45.00	N45° 53' 56"E	3.83	308363.60	2929417.27	308366.27	2929420.02
C33	3.93	5.00	45.02	N0° 53' 17"E	3.83	308302.99	2929392.64	308306.82	2929392.70
C34	3.93	5.00	45.02	N0° 53' 17"E	3.83	308291.18	2929395.74	308295.01	2929395.80
C35	3.93	5.00	45.00	N45° 53' 56"E	3.83	308278.72	2929388.75	308281.38	2929391.50
C36	3.93	5.00	45.00	N45° 53' 56"E	3.83	308272.90	2929378.02	308275.56	2929380.77
C37	3.93	5.00	45.00	N0° 53' 56"E	3.83	308212.30	2929353.39	308216.12	2929353.45
C38	3.93	5.00	45.00	N0° 53' 56"E	3.83	308200.49	2929356.49	308204.32	2929356.55
C39	23.56	15.00	90.00	N68° 23' 56"E	21.21	308192.68	2929336.77	308200.49	2929356.49
C40	31.42	20.00	90.00	S68° 23' 56"W	28.28	308478.22	2929325.03	308467.80	2929298.74
C41	23.56	15.00	90.00	S68° 23' 56"W	21.21	308436.71	2929458.71	308428.91	2929438.99
C42	34.33	25.00	78.69	S15° 56' 43"E	31.70	308699.25	2929550.42	308668.77	2929559.13

STRUCTURE & PIPE DATA – SHEET C–201 & C–202

STRUCTURE TABLE

NAME	DIA.	RIM	INV IN/SIZE/FROM	INV OUT/SIZE/TO
4'x8' GREASE INTERCEPTOR	4'	22.25	17.13/6"PVC/LRC SAN OUTLET 5	17.10/6"PVC/SMH 14
EX SMH 1	4'	13.13	1.30/10"PVC/SMH 1	
OW SEP. 1	4'	20.05	15.48/6"PVC/GARAGE SAN OUTLET	15.14/6"PVC/SMH 4
OW SEP. 2	4'	22.30	17.51/6"PVC/LRC SAN OUTLET 1	17.17/6"PVC/SMH 14
SMH 1	4'	13.33	1.60/10"PVC/SMH 2	1.50/10"PVC/EX SMH 1
SMH 2	4'	14.65	3.55/8"PVC/SMH 12 3.55/10"PVC/SMH 3	3.45/10"PVC/SMH 1
SMH 3	4'	18.80	8.00/10"PVC/SMH 4 8.00/6"PVC/CHILD CARE SAN OUTLET 8.00/8"PVC/SMH 5	7.90/10"PVC/SMH 2
SMH 4	4'	19.90	15.05/6"PVC/OW SEP. 1 9.78/10"PVC/STUB	9.68/10"PVC/SMH 3
SMH 5	4'	21.10	11.02/8"PVC/SMH 6	10.92/8"PVC/SMH 3
SMH 6	4'	21.50	12.18/8"PVC/SMH 7	12.08/8"PVC/SMH 5
SMH 7	4'	22.40	13.60/8"PVC/LRC SAN OUTLET 4 13.54/6"PVC/CO1 13.36/8"PVC/SMH 9	13.26/8"PVC/SMH 6
SMH 9	4'	22.40	14.88/8"PVC/LRC SAN OUTLET 2 14.88/8"PVC/SMH 10	14.78/8"PVC/SMH 7
SMH 10	4'	22.20	15.85/6"PVC/SMH 11	15.75/6"PVC/SMH 9
SMH 11	4'	22.20	16.57/6"PVC/SMH 14	16.47/6"PVC/SMH 10
SMH 12	4'	13.90	5.25/6"PVC/BEAN SAN OUTLET	5.15/8"PVC/SMH 2
SMH 14	4'	22.75	17.00/6"PVC/4'x8' GREASE INTERCEPTOR 17.06/6"PVC/OW SEP. 2	16.96/6"PVC/SMH 11

PIPE TABLE

PIPE NAME	SIZE	LENGTH	SLOPE
S1	10" PVC	16'	0.0125
S2	10" PVC	85'	0.0218
S3	8" PVC	133'	0.0120
S4	6" PVC	43'	0.0105
S5	10" PVC	87'	0.0500
S6	6" PVC	8'	0.0125
S7	6" PVC	55'	0.0242
S8	10" PVC	37'	0.0454
S9	6" PVC	6'	0.0150
S10	6" PVC	43'	0.0121
S11	10" PVC	28'	0.0118
S12	8" PVC	172'	0.0170
S13	8" PVC	88'	0.0120
S14	8" PVC	90'	0.0120
S15	8" PVC	3'	0.0200
S16	6" PVC	5'	0.0200
S17	6" PVC	1'	0.0200
S18	8" PVC	136'	0.0104
S19	8" PVC	7'	0.0129
S20	6" PVC	78'	0.0112
S21	6" PVC	57'	0.0109
S22	6" PVC	22'	0.0177
S25	6" PVC	20'	0.0350
S26	6" PVC	7'	0.0157
S27	6" PVC	12'	0.0150

STRUCTURE & PIPE DATA – SHEET C–301 & C–302

STRUCTURE TABLE

NAME	DIA.	RIM	INV IN/SIZE/FROM	INV OUT/SIZE/TO
AD1	4'	20.75		17.25/12"HDPE/DMH6 (DIV.)
AD2	4'	19.60		15.60/12"HDPE/DMH9
CB1	4'	28.36		24.86/12"HDPE/DOG HS MH 1
CB2	4'	28.06		24.40/12"HDPE/DOG HS MH 2
CB3	4'	25.80		21.50/12"HDPE/DMH28
CB4	4'	24.35		20.00/12"HDPE/DMH28
CB7	4'	26.75		21.75/12"HDPE/CB8
CB8	4'	24.00	17.60/12"HDPE/CB7	17.50/12"HDPE/DMH3
CB10	4'	22.85		17.50/12"HDPE/DMH8
CB11	4'	24.00		20.20/12"HDPE/CB23
CB23	4'	24.00	20.00/12"HDPE/CB11	19.90/12"HDPE/DMH4
CB24	4'	23.70		19.12/12"HDPE/DMH29
DMH1	4'	22.60	18.70/12"HDPE/DMH28	18.60/12"HDPE/DMH2 (DIV.)
DMH2 (DIV.)	4'	22.65	18.10/12"HDPE/DMH1	17.04/12"HDPE/HDS1 16.95/12"HDPE/DMH11
DMH3	4'	22.78	17.24/12"HDPE/CB8 18.70/12"HDPE/DMH29	17.14/18"HDPE/DMH8
DMH4	4'	24.40	19.70/12"HDPE/CB23	19.60/12"HDPE/DMH29
DMH5	4'	24.60	19.20/12"HDPE/FI1 18.00/12"HDPE/FI2	15.00/18"HDPE/DMH21
DMH6 (DIV.)	4'	20.91	17.03/12"HDPE/AD1	16.93/12"HDPE/DMH45 16.93/12"HDPE/OCS4
DMH8	4'	21.90	17.35/12"HDPE/CB10 16.50/18"HDPE/DMH3	16.40/18"HDPE/DMH30
DMH9	4'	20.00	15.50/12"HDPE/AD2	15.40/12"HDPE/AD3
DMH28	4'	24.45	19.90/12"HDPE/CB4 19.90/12"HDPE/CB3	19.80/12"HDPE/DMH1
DMH29	4'	23.75	19.00/12"HDPE/DMH4 18.90/12"HDPE/CB24	19.00/12"HDPE/DMH3
DMH45	4'	20.78	16.90/12"HDPE/DMH6 (DIV.)	16.85/12"HDPE/SSSF1 INLET 2
DMH46	4'	22.50	16.85/12"HDPE/HDS1	16.85/12"HDPE/SSSF1 INLET 1
DOG HS MH 1	4'	28.42	24.76/12"HDPE/CB1	
DOG HS MH 2	4'	28.18	24.30/12"HDPE/CB2	
FI1	2'	23.50		19.65/12"HDPE/DMH5
FI2	2'	22.50		18.50/12"HDPE/DMH5
HDS1	4'	22.58	17.00/12"HDPE/DMH2 (DIV.)	16.90/12"HDPE/DMH46

PIPE TABLE

PIPE NAME	SIZE	LENGTH	SLOPE
SD1	12" HDPE	3'	0.0333
SD2	12" HDPE	2'	0.0500
SD3	12" HDPE	94'	0.0170
SD4	12" HDPE	10'	0.0100
SD5	12" HDPE	80'	0.0062
SD6	12" HDPE	193'	0.0215
SD7	12" HDPE	40'	0.0065
SD8	12" HDPE	29'	0.0103
SD9	12" HDPE	92'	0.0065
SD10	12" HDPE	22'	0.0091
SD11	12" HDPE	38'	0.0053
SD12	12" HDPE	89'	0.0051
SD13	12" HDPE	79'	0.0063
SD16	18" HDPE	126'	0.0051
SD17	12" HDPE	8'	0.0187
SD19	12" HDPE	16'	0.0062
SD20	12" HDPE	113'	0.0212
SD22	12" HDPE	79'	0.0108
SD24	12" HDPE	43'	0.0051
SD27	12" HDPE	2'	0.0150
SD45	12" HDPE	3'	0.0100
SD79	12" HDPE	140'	0.0079
SD81	12" HDPE	6'	0.0367
SD100	18" HDPE	167'	0.0168
SD105	12" HDPE	4'	0.0125

STRUCTURE TABLE

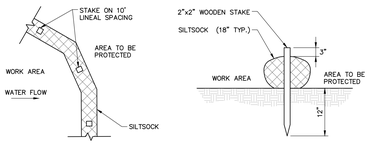
NAME	DIA.	RIM	INV IN/SIZE/FROM	INV OUT/SIZE/TO
AD3	4'	17.00	13.00/12"HDPE/DMH9	12.90/12"HDPE/DMH10
AD4	4'	13.90	9.90/12"HDPE/DMH10	9.80/12"HDPE/AD5
AD5	4'	13.50	9.30/12"HDPE/AD4	9.20/12"HDPE/DMH17
AD6	4'	19.80		16.20/12"HDPE/DMH43
AD7	4'	20.50	16.92/12"HDPE/DMH19 16.92/10"HDPE/FI4	16.82/12"HDPE/DMH43
AD8	4'	21.25		17.25/12"HDPE/DMH37
AD9	4'	17.20		13.50/10"HDPE/DMH39
AD10	4'	10.64		7.54/10"HDPE/DMH26
CB12	4'	20.50		16.10/12"HDPE/DMH30
CB13	4'	19.25		15.75/12"HDPE/DMH32 (DIV.)
CB14	4'	15.75		12.25/12"HDPE/SSSF4 INLET 2
CB21	4'	19.50		15.85/12"HDPE/DMH32 (DIV.)
DMH7	5'	21.10	14.00/12"HDPE/DMH15 (DIV.) 15.85/12"HDPE/FI3 12.15/18"HDPE/DMH11	12.05/18"HDPE/DMH20
DMH10	4'	16.50	12.52/12"HDPE/AD3	12.42/12"HDPE/AD4
DMH11	4'	22.50	12.40/12"HDPE/OCS4 16.10/12"HDPE/DMH2 (DIV.)	12.30/18"HDPE/DMH7
DMH12 (DIV.)	5'	20.03	15.70/12"HDPE/GARAGE ROOF DRAIN 15.63/18"HDPE/DMH30	15.53/12"HDPE/HDS2 15.03/18"HDPE/DMH16
DMH13	4'	19.23	10.28/24"HDPE/DMH14 15.35/12"HDPE/DMH32 (DIV.)	10.18/24"HDPE/DMH25
DMH14	4'	19.50	10.68/24"HDPE/DMH31 12.65/12"HDPE/OCS1	10.58/24"HDPE/DMH13
DMH15 (DIV.)	4'	20.00	15.25/12"HDPE/DMH43	15.15/12"HDPE/DMH7 15.15/12"HDPE/SSSF2 INLET 1
DMH16	4'	19.06	13.15/12"HDPE/DMH33 (DIV.) 14.66/18"HDPE/DMH12 (DIV.)	13.05/18"HDPE/DMH25
DMH17	4'	14.70	8.94/12"HDPE/OCS7 8.94/12"HDPE/AD5	8.84/18"HDPE/DMH18
DMH18	5'	14.30	8.65/18"HDPE/DMH17 9.20/24"HDPE/DMH35	8.55/30"HDPE/
DMH19	4'	22.35	18.40/12"HDPE/LRC ROOF DRAIN 3	18.30/12"HDPE/AD7
DMH20	4'	21.70	11.75/18"HDPE/DMH21 11.75/18"HDPE/DMH7	11.65/24"HDPE/DMH31
DMH21	4'	22.05	12.20/18"HDPE/DMH5	12.10/18"HDPE/DMH20
DMH22	4'	22.40	18.44/12"HDPE/LRC ROOF DRAIN 1	18.34/12"HDPE/DMH36
DMH23	4'	20.40	14.90/10"HDPE/LRC ROOF DRAIN 2	14.80/12"HDPE/DMH24 (DIV.)
DMH24 (DIV.)	4'	18.00	14.00/12"HDPE/DMH23	13.90/12"HDPE/DMH51 13.90/12"HDPE/DMH40
DMH25	4'	19.50	10.12/24"HDPE/DMH13 12.80/18"HDPE/DMH16	10.02/24"HDPE/DMH34
DMH26	4'	11.80	7.20/10"HDPE/TRENCH DRAIN 3 7.20/10"HDPE/AD10	7.10/12"HDPE/
DMH27	4'	18.66	14.77/12"HDPE/BEAN BLDG ROOF DRAIN 2	14.77/12"HDPE/DMH50
DMH30	4'	20.50	15.91/18"HDPE/DMH8 16.00/12"HDPE/CB12	15.81/18"HDPE/DMH12 (DIV.)
DMH31	5'	20.51	10.90/24"HDPE/DMH20 11.35/18"HDPE/OCS6 10.98/12"HDPE/OCS5	10.80/24"HDPE/DMH14
DMH32 (DIV.)	4'	19.90	15.55/12"HDPE/CB13 15.65/12"HDPE/CB21	15.65/12"HDPE/DMH13 15.55/12"HDPE/DMH47
DMH33 (DIV.)	4'	18.45	13.65/8"HDPE/CHILD CARE ROOF DRAIN	13.25/12"HDPE/DMH16 13.25/12"HDPE/SSSF4 INLET 1
DMH34	4'	15.50	9.62/24"HDPE/DMH25	9.52/24"HDPE/DMH35
DMH35	4'	15.50	9.40/24"HDPE/DMH34 10.40/12"HDPE/OCS2	9.30/24"HDPE/DMH18
DMH36	4'	21.73	17.85/12"HDPE/DMH22	17.75/12"HDPE/DMH37
DMH37	4'	22.10	17.35/12"HDPE/DMH36 16.95/12"HDPE/AD8	16.85/12"HDPE/DMH41 (DIV.)
DMH39	4'	16.86	9.88/18"HDPE/OCS8 13.15/10"HDPE/AD9	9.78/24"HDPE/OCS9
DMH40	5'	17.67	9.00/24"HDPE/OCS9 8.90/12"HDPE/OCS3 11.50/12"HDPE/DMH24 (DIV.)	8.80/24"HDPE/
DMH41 (DIV.)	4'	18.22	14.33/12"HDPE/DMH37	14.33/12"HDPE/OCS8 14.23/12"HDPE/DMH52
DMH42	1'	17.33	15.45/12"HDPE/HDS2	15.35/12"HDPE/SSSF3 INLET 2
DMH43	4'	22.80	15.90/12"HDPE/AD7 15.90/12"HDPE/AD6	15.80/12"HDPE/DMH15 (DIV.)
DMH44	4'	19.58	15.70/12"HDPE/BEAN BLDG ROOF DRAIN 1	15.05/12"HDPE/SSSF2 INLET 2
DMH47	4'	19.38	15.50/12"HDPE/DMH32 (DIV.)	15.50/12"HDPE/SSSF3 INLET 1
DMH50	4'	19.30	14.35/12"HDPE/DMH27	14.25/12"HDPE/SSSF5 INLET 2
DMH51	4'	17.68	13.80/12"HDPE/DMH24 (DIV.)	13.70/12"HDPE/SSSF6 INLET 1
DMH52	4'	21.40	14.35/12"HDPE/DMH41 (DIV.)	14.25/12"HDPE/SSSF5 INLET 1
FI3	2'	20.00		16.00/12"HDPE/DMH7
FI4	2'	22.00		18.33/10"HDPE/AD7
HDS2	4'	19.85	15.49/12"HDPE/DMH12 (DIV.)	15.49/12"HDPE/DMH42

STRUCTURE TABLE

NAME	STRUCT. WIDTH	STRUCT. LENGTH	RIM	INV IN/SIZE/FROM	INV OUT/SIZE/TO
OCS1	4'	4'	19.50	16.34/6"HDPE/	15.00/12"HDPE/DMH14
OCS2	4'	4'	14.50	11.34/6"HDPE/	10.50/12"HDPE/DMH35
OCS3	4'	4'	13.00	9.84/6"HDPE/	9.00/12"HDPE/DMH40
OCS4	4'	4'	22.25	12.80/12"HDPE/SSSF1 OUTLET 16.60/12"HDPE/DMH6 (DIV.)	12.70/12"HDPE/DMH11
OCS5	4'	4'	20.40	11.06/12"HDPE/SSSF2 OUTLET	11.06/12"HDPE/DMH31
OCS6	4'	4'	19.60	11.41/18"HDPE/SSSF3 OUTLET	11.41/18"HDPE/DMH31
OCS7	4'	4'	16.70	9.08/12"HDPE/SSSF4 OUTLET	9.08/12"HDPE/DMH17
OCS8	4'	4'	19.20	13.00/12"HDPE/DMH41 (DIV.) 10.17/12"HDPE/SSSF5 OUTLET 10.65/4"HDPE/CO2	10.07/18"HDPE/DMH39
				9.65/24"HDPE/DMH39	

PIPE TABLE

PIPE NAME	SIZE	LENGTH	SLOPE
PIPE 2	12" HDPE	3'	0.0167
SD14	12" HDPE	21'	0.0071
SD15	24" HDPE	17'	0.0071
SD18	18" HDPE	100'	0.0049
SD21	12" HDPE	34'	0.0112
SD23	12" HDPE	27'	0.0122
SD25	12" HDPE	4'	0.0125
SD26	18" HDPE	29'	0.0052
SD28	12" HDPE	8'	0.0125
SD29	12" HDPE	70'	0.0360
SD30	12" HDPE	45'	0.0058
SD31	12" HDPE	55'	0.0055
SD32	12" HDPE	2'	0.0200
SD33	12" HDPE	14'	0.0143
SD34	12" HDPE	10'	0.0300
SD35	24" HDPE	55'	0.0055
SD36	18" HDPE	38'	0.0079
SD37	12" HDPE	17'	0.0676
SD38	10" HDPE	83'	0.0170
SD39	12" HDPE	106'	0.0130
SD40	12" HDPE	7'	0.0143
SD41	12" HDPE	3'	0.0500
SD42	18" HDPE	65'	0.0054
SD43	12" HDPE	61'	0.0090
SD44	12" HDPE	3'	0.0167
SD46	12" HDPE	8'	0.0100
SD47	12" HDPE	44'	0.0045
SD48	12" HDPE	138'	0.0170
SD49	24" HDPE	144'	0.0052
SD50	18" HDPE	9'	0.0067
SD51	24" HDPE	7'	0.0086
SD52	12" HDPE	10'	0.0100
SD53	12" HDPE	6'	0.0167
SD54	18" HDPE	31'	0.0061
SD55	12" HDPE	3'	0.0167
SD56	30" HDPE	24'	0.0063
SD57	8" HDPE	60'	0.0225
SD58	12" HDPE	7'	0.0086
SD59	12" HDPE	97'	0.0051
SD60	12" HDPE	50'	0.0060
SD61	10" HDPE	66'	0.0053
SD62	10" HDPE	7'	0.0143
SD63	12" HDPE	55'	0.0145
SD64	12" HDPE	19'	0.0053
SD65	24" HDPE	76'	0.0053
SD66	24" HDPE	73'	0.0055
SD69	12" HDPE	58'	0.0052
SD70	24" HDPE	14'	0.0086
SD71	4" HDPE	7'	0.0171
SD72	4" HDPE	93'	0.0104
SD73	4" HDPE	1'	0.0700
SD74	18" HDPE	13'	0.0192
SD75	12" HDPE	57'	0.0421
SD76	12" HDPE	9'	0.0111
SD77	24" HDPE	18'	0.0056
SD78	12" HDPE	57'	0.0161
SD82	18" HDPE	26'	0.0069
SD83	6" HDPE	1'	0.0100
SD84	12" HDPE	95'	0.0053
SD85	12" HDPE	9'	0.0078
SD86	12" HDPE	71'	0.0056
SD88	12" HDPE	12'	0.2100
SD89	12" HDPE	1'	0.0300
SD90	4" HDPE	4'	0.0125
SD91	18" HDPE	34'	0.0056
SD93	12" HDPE	57'	0.0053
SD94	24" HDPE	21'	0.0062
SD95	12" HDPE	2'	0.0500
SD96	12" HDPE	25'	0.0080
SD97	24" HDPE	30'	0.0067
SD98	12" HDPE	11'	0.0091
SD99	18" HDPE	34'	0.0109
SD100	18" HDPE	167'	0.0168
SD101	12" HDPE	63'	0.0048
SD102	6" HDPE	2'	0.0250
SD103	6" HDPE	0'	???
SD104	12" HDPE	57'	0.0053
SD106	12" HDPE	2'	0.0200
SD107	18" HDPE	3'	0.0



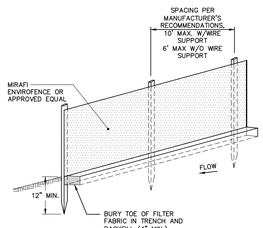
PLAN VIEW SECTION

NOTE:

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

SEDIMENT BARRIER – SILT SOCK

N.T.S.



NOTES:

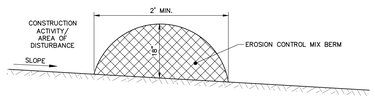
- INSTALL FABRIC ON UPHILL SIDE OF SUPPORT POSTS
- INSTALL SILT FENCE ACROSS SLOPES
- SILT FENCE SHALL NOT BE USED IN DRAINAGE WAYS

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

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

SEDIMENT BARRIER – SILTATION FENCE DETAIL

N.T.S.

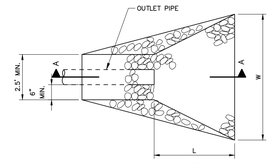


NOTES:

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.

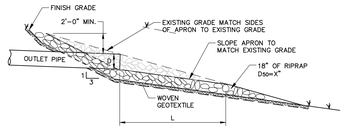
SEDIMENT BARRIER – EROSION CONTROL MIX BERM

N.T.S.



PLAN

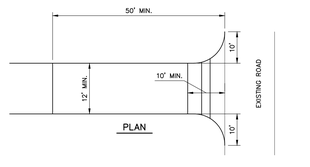
PIPE DIA. (D, IN.)	LENGTH (L, FT.)	WIDTH (W, FT.)	D50 (X, IN.)
18"	6'	4.5'	6"
24"	8'	6'	6"
30"	10'	7.5'	12"



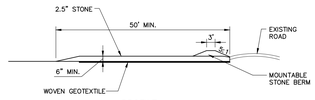
SECTION A–A

RIPRAP INLET/OUTLET PROTECTION

N.T.S.



PLAN



PROFILE

NOTES:

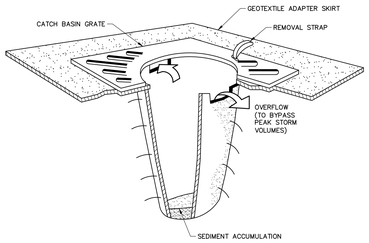
- CONSTRUCTION ENTRANCES MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.
- WHEEL WASH PITS MAY ALSO BE USED, IF APPROVED.

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

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

STABILIZED CONSTRUCTION ENTRANCE DETAIL

N.T.S.



NOTES:

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.

TEMPORARY INLET PROTECTION

N.T.S.

EROSION AND SEDIMENT CONTROL NOTES

TEMPORARY EROSION CONTROL

CONTRACTOR SHALL PREPARE AND SUBMIT A SOIL EROSION AND WATER POLLUTION CONTROL PLAN TO ENGINEER.

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.

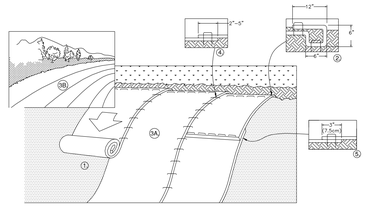
PERMANENT EROSION CONTROL:

MEASURE	DATES FOR USE	TIMING, ACTIVITY, AND LOCATION
PAVEMENT BASE COURSE FINAL COURSE	WHEN NO FROST IS IN GROUND	INSTALL ONLY IN AREAS SHOWN ON THE PLAN, SHORTLY AFTER PAVEMENT BASE IS BROUGHT TO FINAL GRADE. INSTALL NEAR COMPLETION OF PROJECT.
PERMANENT SEEDING	APRIL 15 TO SEPT. 15	ON FINAL GRADE AREAS, WITHIN 7 DAYS OF GRADE PREPARATION, PREPARE TOPSOIL, FOLLOWED BY SEED AND MULCH APPLICATION.
DORMANT SEEDING	SEPT. 16 TO APRIL 15	ON FINAL GRADE AREAS, WITH PREPARED TOPSOIL. APPLY SEED AT DOUBLE THE SPECIFIED RATE ON BARE SOIL, AND FOLLOW WITH AN APPLICATION OF WINTER MULCH.
GROUND COVER, TREES, SHRUBS	APRIL 15 TO NOV. 1	INSTALL WITH FINAL LANDSCAPING.
PERMANENT MULCH	ALL	INSTALL WITH FINAL LANDSCAPING.

INSPECTIONS:

REGULAR INSPECTIONS OF ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE MADE AT LEAST WEEKLY AND PRIOR TO AND FOLLOWING STORM EVENTS. MINIMUM INSPECTIONS SHALL BE MADE AS LISTED IN THE TABLE BELOW.

INSPECTED ITEM	LOOK FOR
MULCHED SURFACES	THIN MULCH OR INADEQUATE APPLICATION. WIND MOVEMENT.
SEEDED SURFACES	POOR SEED GERMINATION, LOSS OF MULCH. DEVELOPMENT OF RIVULETS.
SEDIMENT BARRIER	SEDIMENT BUILD–UP TO ONE HALF THE HEIGHT OF THE BARRIER, UNDERMINING OF THE BARRIER. SUPPORTING STAKES LOOSE, TOPPLED, OR UNMARKED. BREAKS IN BARRIER.
PERIMETER DIVERSION	DISCHARGE IS TO STABILIZED AREA. EROSION OR BREAKS IN BARRIER. SUPPORTING STAKES LOOSE, TOPPLED OR UNMARKED.
CATCH BASIN PROTECTION	SEDIMENT BUILD–UP AND STRUCTURE BLOCKAGES. SLOW FLOW/PONDING WATER. BREAKS IN FABRIC OR VOIDS IN BARRIER.
DEWATERING FILTER	BREAKS IN FABRIC OR SUPPORTING STRUCTURE. SLOW FLOW, INDICATING HIGH SEDIMENT BUILD–UP.
CONSTRUCTION ENTRANCE	SEDIMENTATION OF ROADWAYS. OFF–SITE DUST COMPLAINTS.



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED AS WELL AS REMOVING ANY PROTRUDING ROCKS, STUMPS OR ROOTS. DURING THE GROWING SEASON (APRIL 15–SEPTEMBER 15) USE RECP'S ON THE BASE OF GRASSED WATERWAYS, SOIL SLOPES HAVING A GRADE GREATER THAN 15% OR ANYWHERE WHERE HAY MULCH HAS PROVEN TO BE INEFFECTIVE AT CONTROLLING SHEET EROSION. RECP'S ARE A MANUFACTURED COMBINATION OF MULCH AND NETTING DESIGNED TO PREVENT EROSION AND RETAIN SOIL MOISTURE. FOR OVER WINTER PROTECTION, APPLY RECP'S ON THE BASE AND SIDE SLOPES OF GRASSED WATERWAYS AND ON SLOPES STEEPER THAN AN 8% GRADE.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP's EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECP's.
3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" – 5" OVERLAP DEPENDING ON RECP's TYPE.
5. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECP's WIDTH. NOTE: *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.
6. UNTIL GRASS IS ABUNDANT, INSPECT PERIODICALLY AND AFTER EACH RAINSTORM TO CHECK FOR EROSION. IMMEDIATELY REPAIR AND ADD MORE MULCH UNTIL GRASSES ARE FIRMLY ESTABLISHED. DO NOT MOW THE FIRST YEAR.

ROLLED EROSION CONTROL MATTING

N.T.S.

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 SEDIMENT BARRIER LIKE SILT SOCK, SILT FENCE, AND EROSION CONTROL MIX BERMS, CATCHBASIN TEMPORARY INLET PROTECT 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. HTTP://MAINE.GOV/DEP/BLWQ/DOCSTANDARDS/ESCBMPS/

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

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

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

F. CONSTRUCTION STAGING SHALL BE CONDUCTED IN A WAY TO MINIMIZE THE POTENTIAL FOR STORMWATER RUN–ON TO DISTURBED AREAS. SEDIMENT BARRIER AND ANY OTHER RELEVANT EROSION CONTROL MEASURES SHALL BE MOVED AND/OR ADDED TO, TO ACCOUNT FOR CHANGES IN DISTURBED AREA DUE TO CONSTRUCTION STAGING..

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 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.

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

Woodard & Curran

LAND-USE PERMIT SET

NOT FOR CONSTRUCTION

Number	Revision	Date

STATE OF MAINE
AMY N. LEBEL
17065
REGISTERED PROFESSIONAL ENGINEER
Amy N Lebel

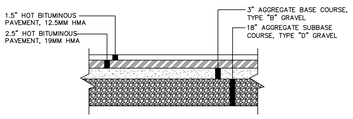
Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 OCTOBER 2023
Scale	AS NOTED

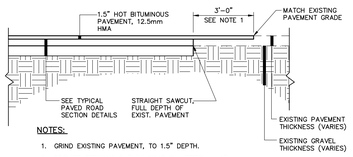
Drawing Title

CIVIL DETAILS - 1

D-401



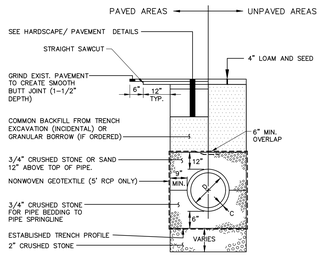
BITUMINOUS PAVEMENT SECTION
N.T.S.



NOTES:

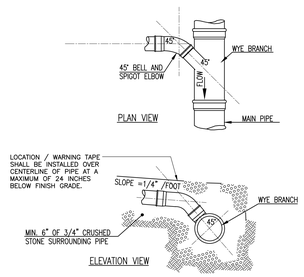
1. GRIND EXISTING PAVEMENT, TO 1.5" DEPTH.
2. PROVIDE BITUMINOUS TACK COAT ON VERTICAL AND HORIZONTAL SURFACES PRIOR TO PAVING.
3. DETAIL APPLICABLE TO PAVEMENT BUTT JOINTS AT ROADWAY WORK LIMITS. REFER TO PIPE INSTALLATION DTL. OR PAVED ROAD SECTION DTLS. FOR TRENCH REPAIR REQUIREMENTS.

PAVEMENT BUTT JOINT DETAIL
N.T.S.

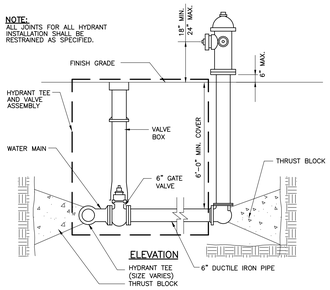


NOTES:
DEPTH & TYPE OF PAVEMENT & AGGREGATE COURSES SHALL BE PER PLANS. SEE CIVIL & LANDSCAPING PAVEMENT DETAILS.

TYPICAL STORMDRAIN/ SEWER PIPE TRENCH INSTALLATION
N.T.S.



TYPICAL LATERAL WYE CONNECTION DETAILS
N.T.S.



TYPICAL HYDRANT ASSEMBLY DETAIL
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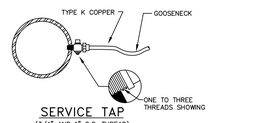
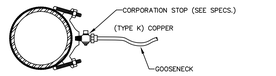
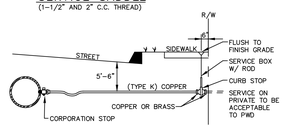


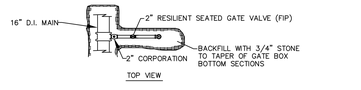
SERVICE TAP
(3/4" AND 1" C.C. THREAD)



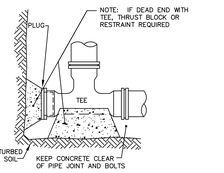
SERVICE SADDLE
(1-1/2" AND 2" C.C. THREAD)



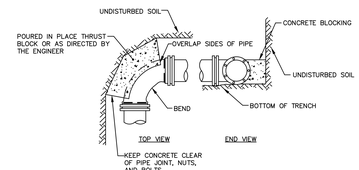
TYPICAL SERVICE CONNECTION
N.T.S.



SIDE-ARM BLOW-OFF 4" & LARGER MAINS
N.T.S.

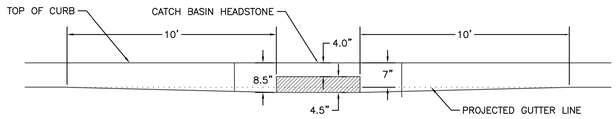


STANDARD TEE BLOCKING
N.T.S.



STANDARD BEND BLOCKING
N.T.S.

NOTE:
DISH 10' EITHER SIDE OF HEADSTONE FOR CATCH BASIN AT LOW POINT



TYPICAL PAVEMENT GRADING FOR CATCH BASIN INLETS (IN CITY RIGHT-OF-WAY)
N.T.S.

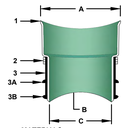
CORRUGATED HDPE/PP BELL GRAVITY APPLICATIONS

A. BELL END ACCEPTS CORRUGATED HDPE/PP DUAL WALL PIPE--ADS/HANCOR INC. SPECIFICATIONS IN 4", 6", 8", 10", 12", 15", 18", 21", 24", AND 30" SIZES.

B. CURVATURE VARIES WITH MAINLINE DIAMETERS.

C. SPIGOT END PVC SDR 35, ASTM D3034 DIAMETERS: 4", 6", 8", 10", 12", 15", 18", 21", 24" AND 30"

PART	PART NAME
1	HUB ADAPTOR
2	SECURING CLAMP*
3	RUBBER SLEEVE (AVAILABLE IN NITRILE AND EPDM BY SPECIAL ORDER)
3A	UPPER SEGMENT**
3B	LOWER SEGMENT**
4	(NOT SHOWN) ADS/HANCOR INC. SUPPLIES VALLEY GASKET



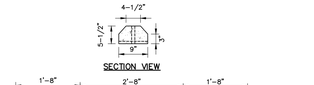
MATERIALS
PVC SDR 26 ASTM D3034
BAND SS #301
SCREW SS #305
HOUSING SS #301
ASTM F477

* OPTIONAL: #316 STAINLESS STEEL BAND, SCREW AND HOUSING
** DISTANCE BETWEEN 4A AND 4B WILL VARY BY PRODUCT TYPE
*** WILL NOT APPEAR ON RUBBER SLEEVES FOR CONCRETE OR CLAY PIPE

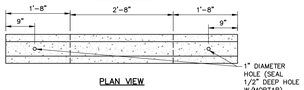
INSERTA TEE SIZE	HOLE DIAMETER
4" (100 mm)	4 5/8" (114 mm)
6" (150 mm)	6 1/2" (165 mm)
8" (200 mm)	8 3/4" (222 mm)
10" (250 mm)	10 7/8" (276 mm)
12" (300 mm)	12 7/8" (327 mm)
15" (375 mm)	15 15/16" (402 mm)
18" (450 mm)	19 3/4" (503 mm)
21" (525 mm)	22 3/4" (573 mm)
24" (600 mm)	25 3/4" (643 mm)
30" (750 mm)	32 15/32" (826 mm)

NOTE: RECOMMENDED METHOD OF CUTTING HOLE IS WITH HOLE SAW FOR PVC AND OTHER PLASTICS, AND DIAMOND BIT FOR CONCRETES, CLAY, FRP AND D.I. (SEE INSTALLATION INSTRUCTIONS. HOLE SAWS ARE AVAILABLE FOR PURCHASE OR RENT.)

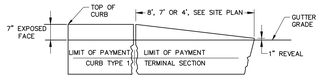
INSERTA TEE DETAIL
N.T.S.



SECTION VIEW

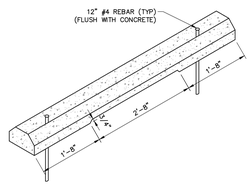


PLAN VIEW



TERMINAL SECTION TYPE "1"

TERMINAL CURB SECTION
N.T.S.

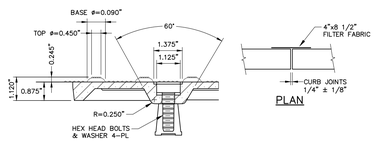


ISOMETRIC VIEW

NOTE:

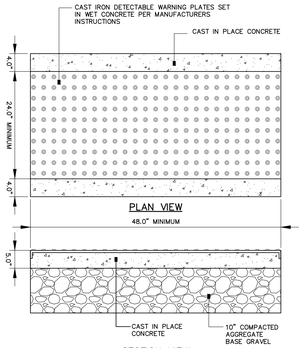
1. CONCRETE SHALL BE 4,000 PSI.

WHEEL STOP
N.T.S.



PLAN

BOLT DETAIL

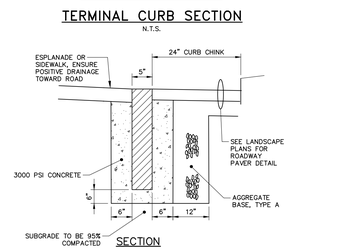


SECTION VIEW

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.



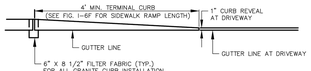
SECTION

NOTES:

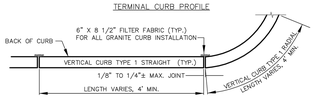
1. THE MINIMUM HEIGHT OF THE CONCRETE BACKING SHALL BE 10-INCHES OR TO THE BOTTOM OF THE HOT MIX ASPHALT PAVEMENT, WHICHEVER IS GREATER, MEASURED FROM THE BOTTOM OF CURB.
2. WOODEN SHIMS MAY BE USED TO SET CURB.

TYPICAL FLUSH CURB INSTALLATION (IN CITY RIGHT-OF-WAY)
N.T.S.

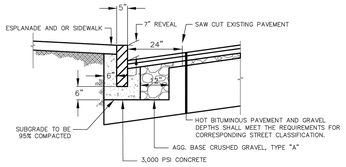
NOTE: AGGREGATE TYPES PER MDOT SECTION 304.02



TERMINAL CURB PROFILE



VERTICAL GRANITE CURB PLAN VIEW



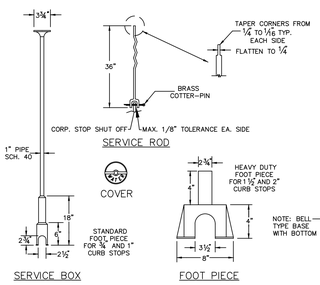
VERTICAL GRANITE CURB CROSS SECTION

NOTES:

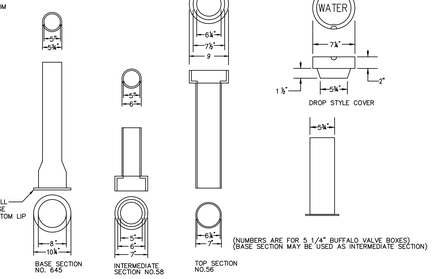
1. INDIVIDUAL PIECES OF CURB SHORTER THAN 4 L.F. ARE NOT ALLOWED, WITH THE EXCEPTION OF RADIAL CURB.
2. THE MINIMUM HEIGHT OF THE CONCRETE BACKING SHALL BE 10-INCHES OR TO THE BOTTOM OF THE HOT MIX ASPHALT PAVEMENT, WHICHEVER IS GREATER, MEASURED FROM THE BOTTOM OF CURB.
3. CURBING SHALL BE SET IN A 6-INCH BED OF POURED IN PLACE 3,000 PSI CONCRETE MIX.
4. WOODEN SHIMS MAY BE USED TO SET CURB.

VERTICAL GRANITE CURB (IN CITY RIGHT-OF-WAY)
N.T.S.

VALVE WITH VALVE BOX
N.T.S.

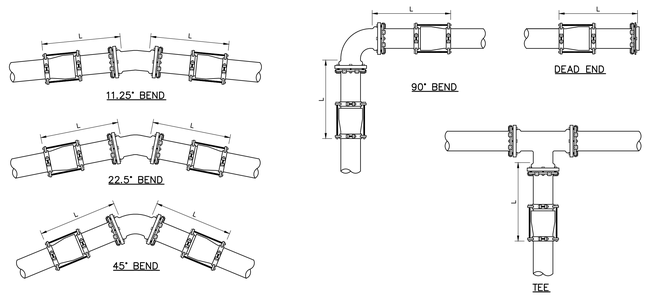


NOTE : ANY EXTENSION OF SERVICE BOX REQUIRES:
1) 1" FEMALE IRON PIPE COUPLING
2) 1" THREADED PIPE
(THIS IS TO BE A NON-WELDED, TWO PIECE ARRANGEMENT. SLIP ON ADAPTERS ARE NOT PERMISSIBLE.)



(NUMBERS ARE FOR 5 1/4" BUFFALO VALVE BOXES) (BASE SECTION MAY BE USED AS INTERMEDIATE SECTION)

VALVE BOX & COVER
N.T.S.



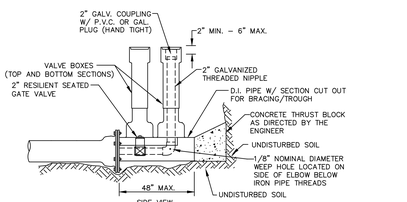
DIAMETER	REQUIRED LENGTH OF RESTRAINED JOINT PIPE ON BOTH SIDES OF FITTING — HORIZONTAL BEND				REQUIRED LENGTH OF RESTRAINED JOINT PIPE
	11.25°	22.5°	45°	TEE/90°	DEAD END
6"	2'	4'	9'	21'	51'
8"	3'	6'	11'	27'	67'
10"	4'	7'	14'	32'	81'
12"	4'	8'	16'	38'	96'
16"	5'	10'	20'	48'	123'

ASSUMED PARAMETERS:	
LAYING CONDITION	TYPE 5
SOIL DESIGNATION	SILT 1
DEPTH COVER	5 FT
DESIGN PRESSURE	200 PSI
SAFETY FACTOR	1.5

NOTES:

1. RESTRAINED JOINTS SHALL BE MECHANICAL JOINT OR PUSH-ON RESTRAINED JOINT AS SPECIFIED IN SECTION 33 14 11.01.

THRUST RESTRAINT DETAIL
N.T.S.



STANDARD 2" BLOW OFF
N.T.S.

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

Woodard & Curran

LAND-USE PERMIT SET

NOT FOR CONSTRUCTION

Number	Revision	Date

STATE OF MAINE
AMY N. LEBEL
17065
LICENSED
PROFESSIONAL ENGINEER

Stamp

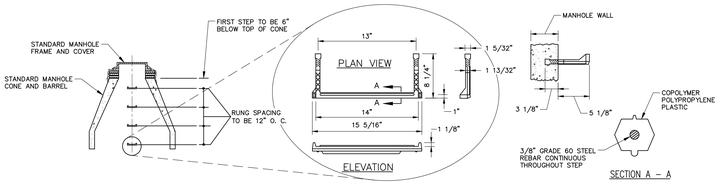
Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 OCTOBER 2023
Scale	AS NOTED

Drawing Title
CIVIL DETAILS - 2

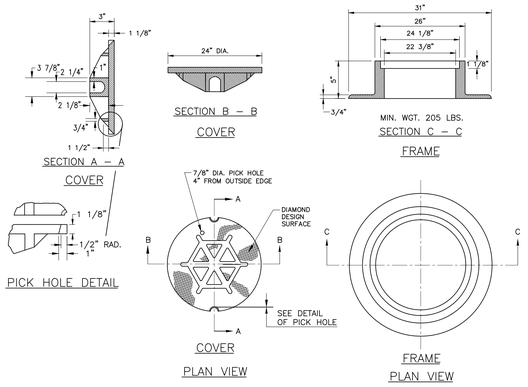
D-402

GENERAL NOTES FOR MANHOLES AND CATCH BASINS

1. ALL CONCRETE SHALL BE CLASS "A" AND HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 LBS. PER SQ. INCH AT THE END OF 28 DAYS, UNLESS OTHERWISE NOTED.
2. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPEC. C-478.
3. ALL MANHOLES SHALL HAVE A BITUMINOUS WATERPROOFING APPLIED TO THE EXTERIOR SURFACE. IF CONSTRUCTED OF BRICK MASONRY, SURFACE SHALL BE PLASTERED WITH A SMOOTH MORTAR FINISH 3/8" THICK. AFTER THE MORTAR HAS SET, THE SURFACE SHALL BE WATERPROOFED AS REQUIRED BY SUPPLEMENTAL SPECIFICATIONS SECTION 604.
4. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48-CLASS 35. ALL PARTS OF CASTINGS, EXCEPT FINISHED SURFACE, SHALL RECEIVE A COAT OF COAL TAR PITCH VARNISH OR ASPHALTUM PAINT WHICH SHALL BE SMOOTH AND TOUGH BUT NOT BRITTLE.
5. MANHOLES MAY BE CONSTRUCTED OF MASONRY, PRECAST REINFORCED CONCRETE, OR CAST IN PLACE.
6. CONTRACTOR SHALL SUBMIT ANTIFLOATATION CALCULATIONS FOR ALL MANHOLE AND CATCH BASIN STRUCTURES.
7. ALL PRECAST MANHOLES AND CATCH BASINS SHALL BE IDENTIFIED BY STATION, OFFSET, AND STRUCTURE ID PAINTED ON THE SIDE OF THE STRUCTURE BY THE MANUFACTURER.
8. STORM AND SEWER MANHOLES SHALL HAVE SOLID COVERS WITH ONE DRILLED PICK HOLE.
9. EXISTING MANHOLES, CATCH BASINS, FRAMES, AND COVERS SHALL BE SALVAGED BY THE CONTRACTOR, AND SHALL REMAIN THE PROPERTY OF THE CITY OF PORTLAND.
10. WHEN THE FLOW CHANGES DIRECTION IN A MANHOLE, THE CHANNEL ALIGNMENT SHALL FOLLOW A SMOOTH RADIUS. CHANNELS SHALL BE FORMED TO ACCEPT ALL INLET PIPES.
11. ON STORM AND SEWER MANHOLES, THE SHELF AND CHANNEL SHALL BE FORMED BY BRICK SET IN CEMENT MORTAR OR BY FACTORY PRE-CAST CONCRETE. SUCH PRE-CAST CONCRETE SHALL BE EPOXY COATED AND THE SHELF SHALL HAVE A PERMANENT NON-SKID SURFACE.



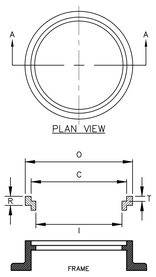
PLASTIC MANHOLE STEPS
N.T.S.



NOTE:

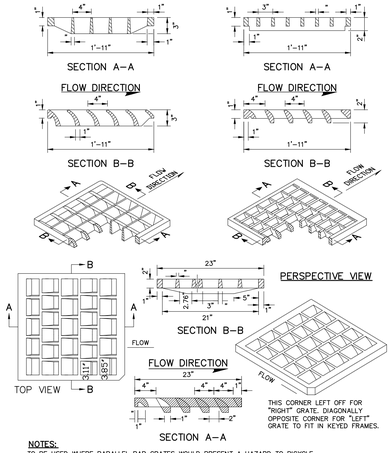
FOR ALL CROSS COUNTRY MANHOLES (LAWN AREAS), USE PAM REXUS MANHOLE COVERS BY CERTAINTEED.

TYPE "A" CAST IRON MANHOLE COVER AND FRAME
N.T.S.



SIZE	C	R	T	O	I	Wt.
R241 1/2	24	1 1/2	1 1/8	26 1/4	22 1/2	60
R242	24	2	1 1/8	26 1/4	22 1/2	80
R242 1/2	24	2 1/2	1 1/8	26 1/4	22	100
R243	24	3	1 1/8	26 1/4	22	120

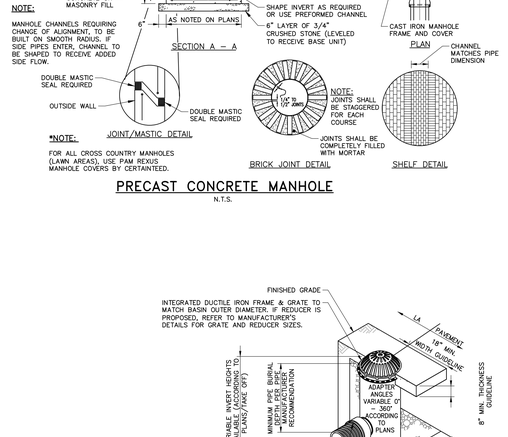
MANHOLE RISER RING
N.T.S.



NOTES:

TO BE USED WHERE PARALLEL BAR GRATES WOULD PRESENT A HAZARD TO BICYCLE TRAFFIC. FOR USE ON CATCH BASIN TYPES: A1–C, A2–C, A5–C, B1–C, B2–C, B5–C, F3–C, F4–C, F5–C, F6–C.

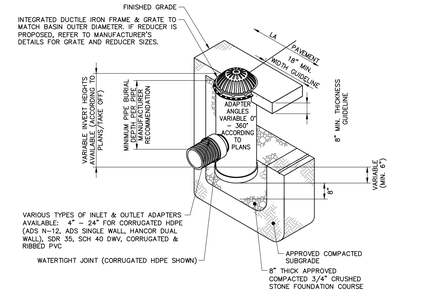
"CASCADE-TYPE" GRATES
N.T.S.



*NOTE:

FOR ALL CROSS COUNTRY MANHOLES (LAWN AREAS), USE PAM REXUS MANHOLE COVERS BY CERTAINTEED.

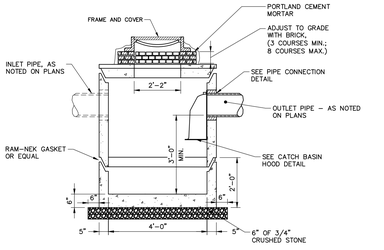
PRECAST CONCRETE MANHOLE
N.T.S.



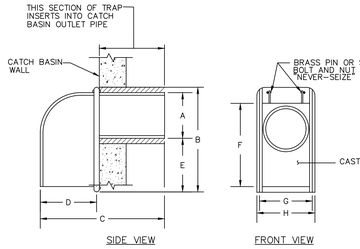
NOTES:

1. INSTALL BASIN IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS
2. PRODUCT SHALL BE NYLOPLAST DRAIN BASIN MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS (ADS) OR APPROVED EQUAL.
3. GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
4. FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
5. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTORATIONS.
6. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC.
7. ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°.

FIELD INLET
N.T.S.



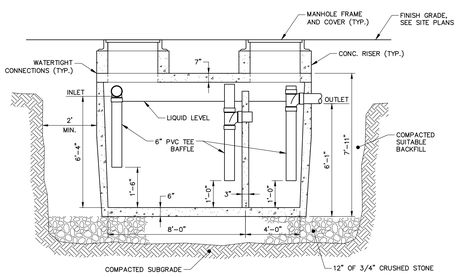
PRECAST CONCRETE CATCH BASIN
N.T.S.



SIZE	A	B	C	D	E	F	G	H
6 in.	5 1/2"	13 3/8"	13 3/4"	5 3/8"	5 7/8"	11 5/8"	6 1/2"	7 1/4"
8 in.	7 1/2"	15"	15 3/8"	5 1/2"	5 3/8"	13 3/4"	8 3/4"	9 3/8"
10 in.	9 1/2"	16"	16 1/4"	6"	4 1/2"	14 1/8"	11 1/2"	12 3/8"
12 in.	11 1/2"	17"	22"	8"	3 1/2"	17"	12 1/2"	13 3/8"

NOTE: PROVIDE IN CATCH BASINS IN PAVED AREAS ONLY.

CATCH BASIN HOOD
N.T.S.



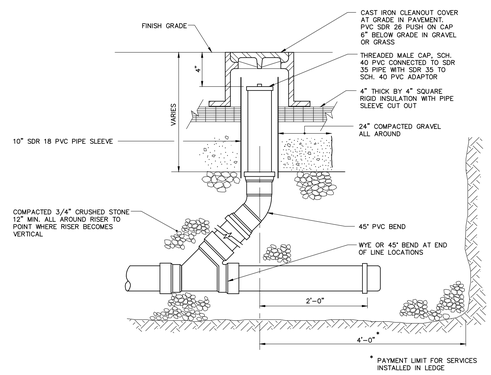
CONCRETE SPECIFICATIONS

1. 5,000 PSI AT 28 DAYS
2. 4% – 6% ENTRAINED AIR
3. TANK PENETRATIONS ARE INTEGRALLY CAST
4. ALL JOINTS SEALED WITH BUTYL RUBBER JOINT SEALANT
5. H-20 LOADING

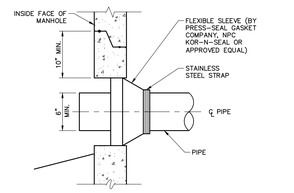
GREASE TRAP INFORMATION

1. TANKS SHOULD BE PUMPED AS NEEDED
2. ACCESS COVERS SHOULD HAVE RISERS TO BRING COVER ACCESS TO GRADE.

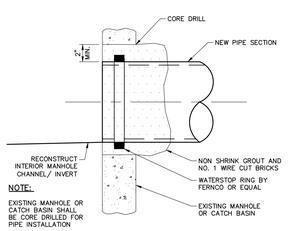
EXTERNAL GREASE TRAP DETAIL
N.T.S.



CLEANOUT DETAIL
N.T.S.



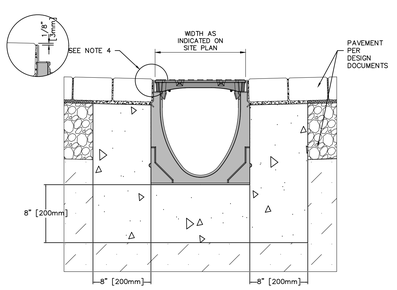
NEW PIPE TO NEW STRUCTURE CONNECTION DETAIL
N.T.S.



NOTE:

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

NEW PIPE TO EXISTING STRUCTURE
N.T.S.



NOTES:

1. IT IS NECESSARY TO ENSURE MINIMUM DIMENSIONS SHOWN ARE SUITABLE FOR EXISTING GROUND CONDITIONS. ENGINEERING ADVICE MAY BE REQUIRED.
2. MINIMUM CONCRETE STRENGTH OF 4,000 PSI IS RECOMMENDED. CONCRETE SHOULD BE VIBRATED TO ELIMINATE AIR POCKETS.
3. EXPANSION AND CONTRACTION CONTROL JOINTS AND REINFORCEMENT ARE RECOMMENDED TO PROTECT CHANNEL AND CONCRETE SURROUND. ENGINEERING ADVICE MAY BE REQUIRED.
4. THE FINISHED LEVEL OF THE CONCRETE SURROUND MUST BE APPROX. 1/8" [3mm] ABOVE THE TOP OF THE CHANNEL EDGE.
5. CONCRETE BASE THICKNESS SHOULD MATCH SLAB THICKNESS. ENGINEERING ADVICE MAY BE REQUIRED TO DETERMINE PROPER LOAD CLASS.
6. REFER TO ACO'S LATEST INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS.

TRENCH DRAIN
N.T.S.

SPECIFICATION CLAUSE

K200 KLASSIKDRAIN 'DRAINLOK' LOAD CLASS C

GENERAL

THE SURFACE DRAINAGE SYSTEM SHALL BE POLYMER CONCRETE K200 CHANNEL SYSTEM WITH GALVANIZED STEEL EDGE RAILS AS MANUFACTURED BY ACO POLYMER PRODUCTS, INC.

MATERIALS

CHANNELS SHALL BE MANUFACTURED FROM POLYESTER RESIN POLYMER CONCRETE WITH AN INTEGRALLY CAST-IN GALVANIZED STEEL EDGE RAIL. MINIMUM PROPERTIES OF POLYMER CONCRETE WILL BE AS FOLLOWS:

COMPRESSIVE STRENGTH: 14,000 PSI
FLEXURAL STRENGTH: 4,000 PSI
TENSILE STRENGTH: 1,500 PSI
WATER ABSORPTION: 0.07%
FROST PROOF: YES
DILUTE ACID AND ALKALI RESISTANT: YES
B117 SALT SPRAY TEST COMPLIANT: YES

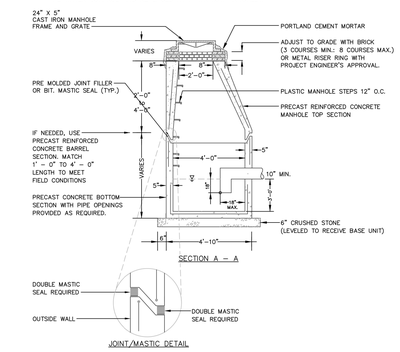
THE SYSTEM SHALL BE 8" (200mm) NOMINAL INTERNAL WIDTH WITH A 10.2" (260mm) OVERALL WIDTH AND A BUILT-IN SLOPE OF 0.5%. CHANNEL INVERT SHALL HAVE DEVELOPED "V" SHAPE. ALL CHANNELS SHALL BE INTERLOCKING WITH A MALE/FEMALE JOINT.

THE COMPLETE DRAINAGE SYSTEM SHALL BE BY ACO POLYMER PRODUCTS, INC. ANY DEVIATION OR PARTIAL SYSTEM DESIGN AND/OR IMPROPER INSTALLATION WILL VOID ANY AND ALL WARRANTIES PROVIDED BY ACO POLYMER PRODUCTS, INC.

CHANNEL SHALL WITHSTAND LOADING TO PROPER LOAD CLASS AS OUTLINED BY EN 1433. GRATE TYPE SHALL BE APPROPRIATE TO MEET THE SYSTEM LOAD CLASS SPECIFIED AND INTENDED APPLICATION. GRATES SHALL BE SECURED USING "DRAINLOK" BOLTLESS LOCKING SYSTEM. CHANNEL AND GRATE SHALL BE CERTIFIED TO MEET THE SPECIFIED EN 1433 LOAD CLASS. THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.

NOTES:

- FOR USE IN PARTIALLY OR TOTALLY ENCLOSED PARKING GARAGES, AUTOMOTIVE REPAIR FACILITIES OR ANY OTHER PROPOSED STRUCTURE WHERE DEEMED APPROPRIATE BY THE CITY ENGINEER.
- DISCHARGE SHALL BE TO SANITARY SEWER.
- A VENT PIPE MAY BE REQUIRED THAT HAS A VERTICAL OUTLET OFF TO THE SIDE OF THE STRUCTURE.
- AN OIL ABSORBENT BOOM IS REQUIRED TO BE PLACED WITHIN THE MANHOLE ON THE WATER SURFACE AND REPLACED AT A MINIMUM ANNUALLY.



OIL / GRIT SEPARATOR
N.T.S.

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
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LAND-USE PERMIT SET

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Number	Revision	Date

STATE OF MAINE
AMY N. LEBEL
17065
LICENSED PROFESSIONAL ENGINEER

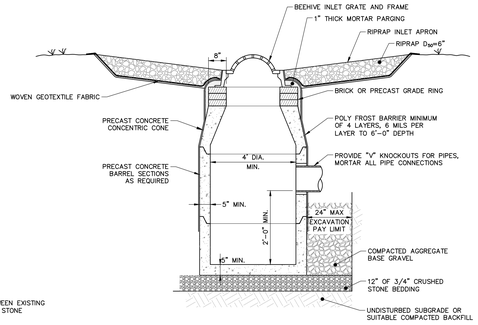
Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 OCTOBER 2023
Scale	AS NOTED

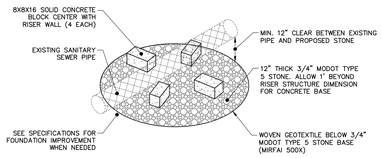
Drawing Title

CIVIL DETAILS - 3

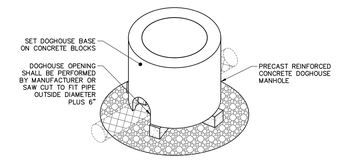
D-403



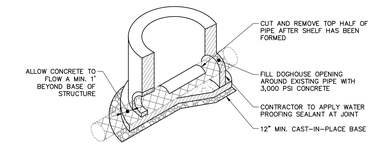
AREA DRAIN IN RIPRAP
N.T.S.



BASE ISOMETRIC VIEW



RISER ISOMETRIC VIEW

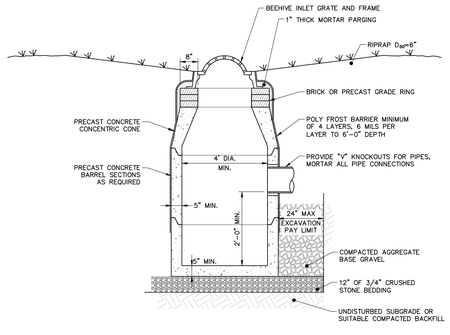


FOUNDATION SECTION VIEW

NOTES:

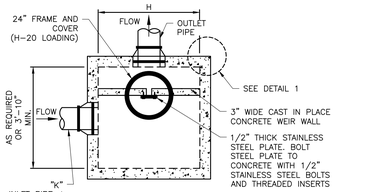
1. ASSEMBLED DOGHOUSE MANHOLE SHALL BE IN ACCORDANCE WITH ALL REQUIREMENTS OF PRECAST MANHOLE DETAIL ON THIS SHEET.

DOGHOUSE MANHOLE
NOT TO SCALE



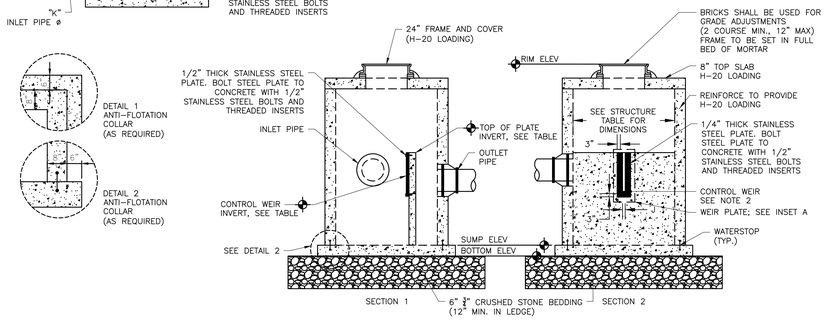
AREA DRAIN IN VEGETATION
N.T.S.

OUTLET CONTROL STRUCTURE – DIMENSIONS/ ELEVATIONS		
LOCATION	TOP OF PLATE B (ELEV.)	CONTROL WEIR C (ELEV.)
OCS1	19.34	17.34
OCS2	14.34	12.34
OCS3	12.84	10.84
OCS4	15.80	13.80
OCS5	14.06	12.06
OCS6	14.41	12.41
OCS7	12.08	10.08
OCS8	13.17	11.17
OCS9	12.60	10.60

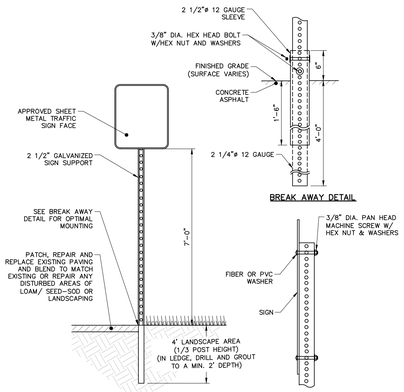


NOTES:

1) ALL CEMENT CONCRETE TO BE 4000 PSI (MIN).
2) CONTROL WEIR SHALL BE SIZED TO MITIGATE DESIGN STORM AS REQUIRED BY THE REGULATIONS AND IN ACCORDANCE WITH THE APPROVED DRAINAGE CALCULATIONS. STAINLESS STEEL PLATE SHALL BE USED FOR CONTROL WEIRS LESS THAN 2 INCHES WIDE.
3) ALL STAINLESS STEEL SHALL BE GRADE 316.
4) MINIMUM EMBANKMENT ELEVATION TO BE 12" ABOVE 50-YEAR STORM ELEVATION.



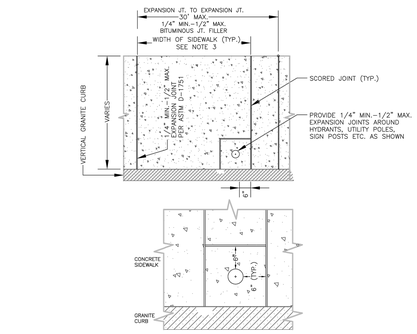
OUTLET CONTROL STRUCTURE
N.T.S.



NOTES:

1. ALL HARDWARE SHALL BE STAINLESS STEEL.

TRAFFIC SIGN POST
N.T.S.

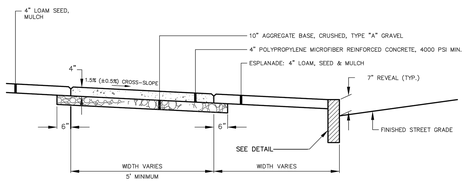


CONCRETE SIDEWALK JOINT NOTES:

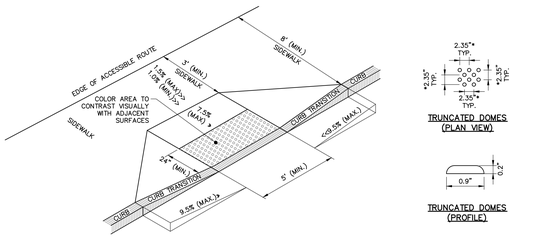
1. EXPANSION JOINTS SHALL BE LOCATED WHERE SIDEWALK ABUTS DRIVEWAYS, CURB OR OTHER ADJACENT STRUCTURES.
2. SLABS SHALL BE PLACED ALTERNATELY IN LENGTHS, NOT TO EXCEED 30 LINEAR FEET OR AS DIRECTED AND SHALL BE SEPARATED BY AN EXPANSION JOINT OF PREFORMED EXPANSION FILLER 1/4" MIN.-1/2" MAX. IN THICKNESS AND SHALL EXTEND THE FULL LENGTH/DEPTH OF THE CONCRETE.
3. THE SIDEWALK SURFACE SHALL BE SCORED INTO BLOCK UNITS. THE DEPTH OF SCORING SHALL BE AT LEAST ONE QUARTER OF THICKNESS OF THE SLABS (1" TYP.). SCORED JOINTS MUST BE COMPLETED AS PART OF THE FINISHING PROCESS. SAW CUTTING OF JOINTS IS NOT ALLOWED. SCORED JOINTS SHALL BE PLACED AT THE FOLLOWING LOCATIONS:
   A. IN LOCATIONS TO ENSURE BLOCK UNITS DO NOT EXCEED 36 SQUARE FEET.
   B. AT THE SPACING THAT MATCHES ADJACENT TIP DOWN CURB
   C. EXTENSION OF EXPANSION JOINTS LOCATED AT HYDRANTS & UTILITY POLES.
4. ALL OUTSIDE EDGES OF THE SLAB AND ALL JOINTS SHALL BE ROUNDED WITH A 1/4" RADIUS EDGING TOOL.
5. CONCRETE SHALL BE FINISHED BY MEANS OF A FLOAT, STEEL TROWELED AND BROOMED WITH A FINE BRUSH IN A TRANSVERSE DIRECTION.

SIDEWALK EXPANSION JOINT (IN CITY RIGHT-OF-WAY)
N.T.S.

NOTE
CONCRETE SIDEWALKS TO BE TREATED WITH CONSOLIDECK SALTGUARD WB OR APPROVED EQUAL. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR APPLICATION.



REINFORCED CONCRETE SIDEWALK (IN CITY RIGHT-OF-WAY)
N.T.S.

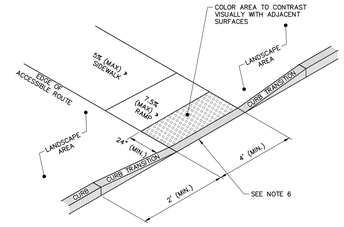


*DIMENSIONS ARE CENTER TO CENTER

NOTES:

1. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5% (1% MIN.)
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE CURB RAMPS SHALL BE 7.5%.
4. A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E. HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.)
5. BASE OF RAMP SHALL BE GRADED TO PREVENT PONDING.
6. ADJACENT SURFACES AT TRANSITIONS SHALL BE FLUSH WITH CURB RAMPS.
7. SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
8. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5'x5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
9. ELIMINATE ALL CURBING AT RAMP (OTHER THAN VERTICAL CURBING, WHICH SHALL BE SET FLUSH) WHERE IT ABUTS ROADWAY OR OTHERWISE INDICATED.
10. DETECTABLE WARNING SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES.
11. TRUNCATED DOMES AND ALL RELATED INSTALLED SURFACES TO BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS. ALL DETECTABLE WARNING SURFACE INSTALLATIONS SHALL BE AT A MINIMUM AT LEAST AS NON SKID AS THE SURROUNDING PEDESTRIAN SURFACES.
12. FOR ALLOWABLE SLOPE OF ACCESSIBLE ROUTE ON EXISTING SITE, SEE SECTION 405 OF THE ADA STANDARD FOR ACCESSIBLE DESIGN.

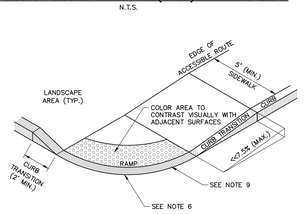
ACCESSIBLE CURB RAMP (ACR) – TYPE 'A'
N.T.S.



NOTE:

1. ACCESSIBLE CURB RAMP NOTES PROVIDED UNDER "ACCESSIBLE CURB RAMP – TYPE 'A' DETAIL ON THIS SHEET ARE APPLICABLE.

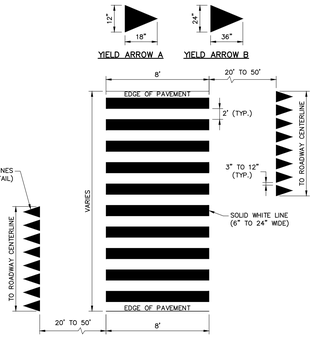
ACCESSIBLE CURB RAMP (ACR) – TYPE 'D'
N.T.S.



NOTE:

1. ACCESSIBLE CURB RAMP NOTES PROVIDED UNDER "ACCESSIBLE CURB RAMP – TYPE 'A' DETAIL ON THIS SHEET ARE APPLICABLE.

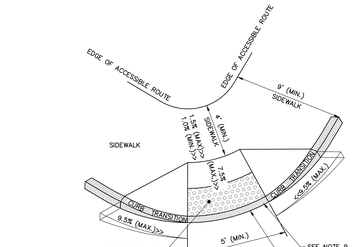
ACCESSIBLE CURB RAMP (ACR) – TYPE 'E'
N.T.S.



NOTE:

1. YIELD ARROW A SHALL BE USED FOR TRAVEL LANES UNDER TWELVE (12) FEET. YIELD ARROW B SHALL BE USED FOR TRAVEL LANES TWELVE (12) FEET OR GREATER

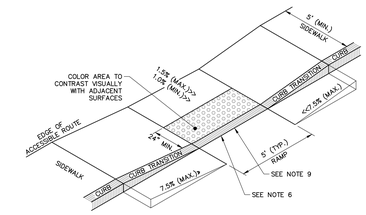
CROSSWALK PAVEMENT MARKINGS
N.T.S.



NOTE:

1. ACCESSIBLE CURB RAMP NOTES PROVIDED UNDER "ACCESSIBLE CURB RAMP – TYPE 'A' DETAIL ON THIS SHEET ARE APPLICABLE.

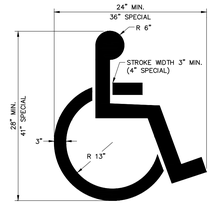
ACCESSIBLE CURB RAMP (ACR) – TYPE 'F'
N.T.S.



NOTE:

1. ACCESSIBLE CURB RAMP NOTES PROVIDED UNDER "ACCESSIBLE CURB RAMP – TYPE 'A' DETAIL ON THIS SHEET ARE APPLICABLE.

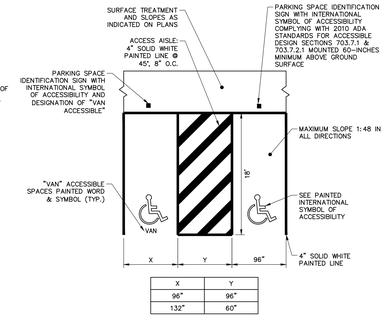
ACCESSIBLE CURB RAMP (ACR) – TYPE 'H'
N.T.S.



NOTES:

1. SYMBOL SHALL BE PAINTED WHITE IN COMPLIANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) SECTION 3B.19, SECTION 3B.20 AND FIGURE 3B-22.
2. A BLUE RECTANGULAR (MIN. 36" X 36") BACKGROUND AND WHITE BORDER ARE OPTIONAL IN ACCORDANCE WITH MUTCD SECTION 3B.19 AND FIGURE 3B-22.
3. SYMBOL FINISH SHALL BE NON-GLARE IN ACCORDANCE WITH ADA STANDARDS FOR ACCESSIBLE DESIGN SECTION 703.7.1.

PAINTED INTERNATIONAL SYMBOL OF ACCESSIBILITY
N.T.S.



X	Y
96"	96"
132"	60"

ACCESSIBLE PARKING STALL LAYOUT
N.T.S.

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

Woodard & Curran

LAND-USE PERMIT SET

NOT FOR CONSTRUCTION

Number	Revision	Date

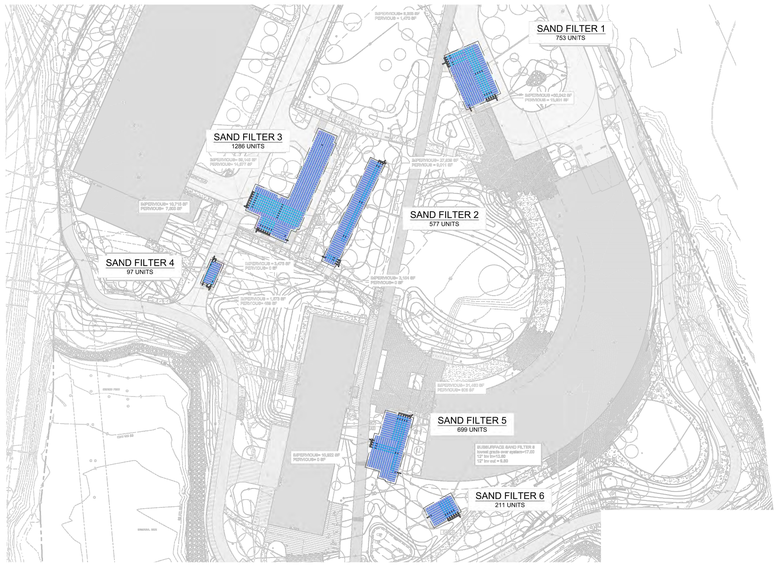
STATE OF MAINE
AMY N. LEBEL
17065
LICENSED PROFESSIONAL ENGINEER
Amy N. Lebel

Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 OCTOBER 2023
Scale	AS NOTED

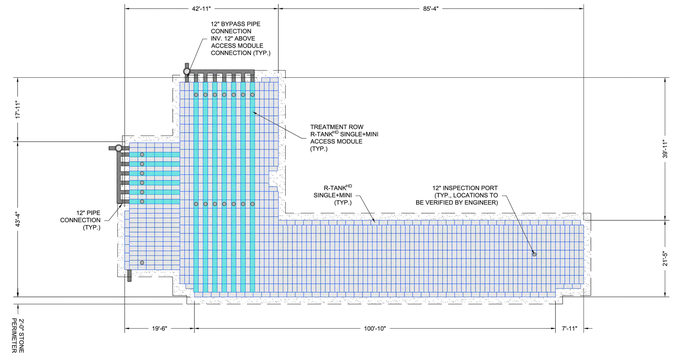
Drawing Title
CIVIL DETAILS - 4

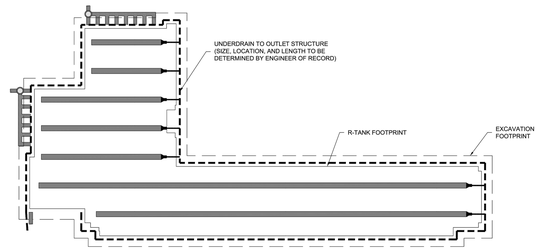
D-404



SUBSURFACE STORMWATER TREATMENT INDEX

N.T.S.





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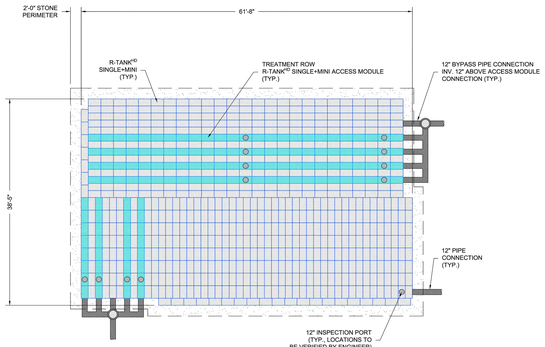

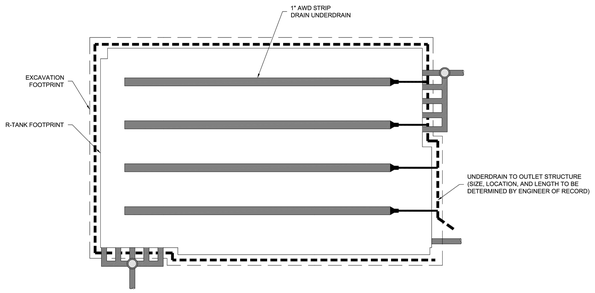

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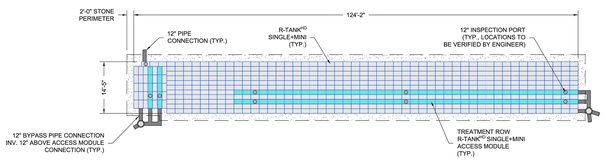

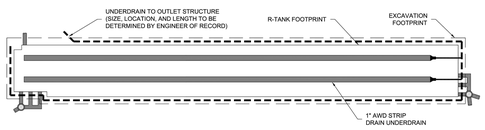

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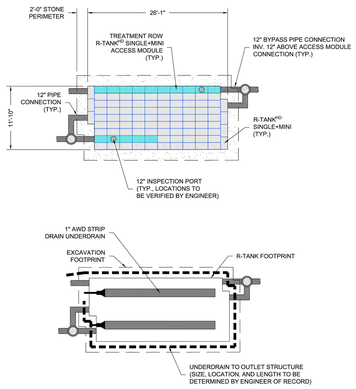

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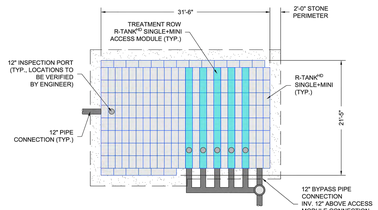

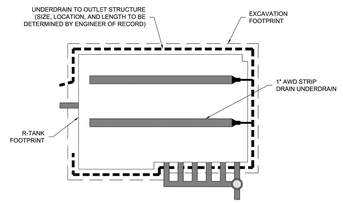

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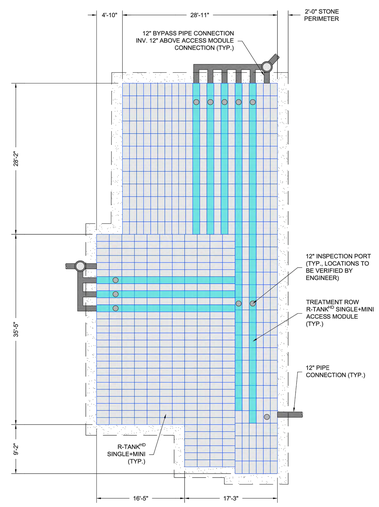

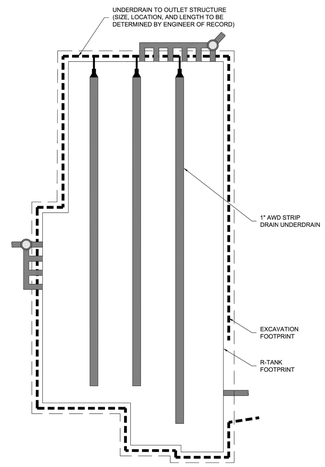

SAND FILTER 5

IDEALS
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Roux Campus

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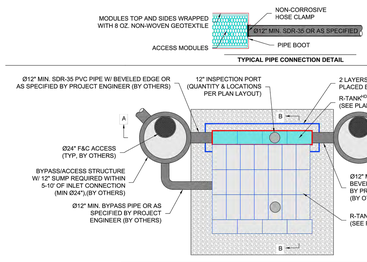
CIVIL DETAILS - 5

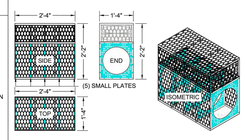
D-405



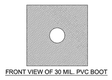
NOTE:
IF PIPE CONNECTING TO TREATMENT ROW IS LARGER THAN Ø12" SDR-35, IT SHALL BE ABUTTED FLUSH TO END PLATE AND SEALED WITH A PIPE BOOT.

TYPICAL PIPE CONNECTION DETAIL

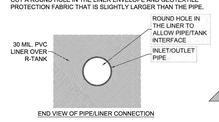
R-TANK^HD TREATMENT ROW WITH PRECAST INLET/ACCESS STRUCTURE



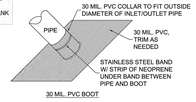
SINGLE + MINI R-TANK^HD - ACCESS MODULE DETAIL
(FOR MODULE DATA, SEE STANDARD MODULE DETAIL)



FRONT VIEW OF 30 MIL. PVC BOOT

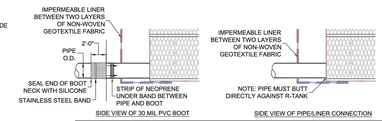


END VIEW OF PIPE/LINER CONNECTION



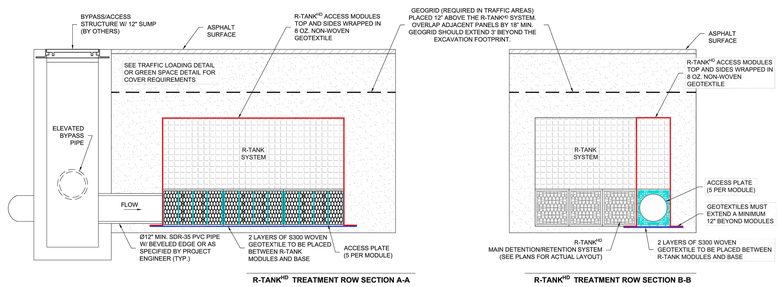
30 MIL. PVC BOOT

AFTER LINER IS CUT AND PIPE INSTALLED, SLIDE BOOT AGAINST LINER AND SECURE WITH STAINLESS STEEL BAND, THEN BOND BOOT TO LINER AND SEAL END OF BOOT WITH SILICONE. REPLACE ANY GEOTEXTILE PROTECTION FABRIC REMOVED DURING BOOT INSTALLATION PROCESS.



SIDE VIEW OF 30 MIL PVC BOOT | SIDE VIEW OF PIPE/LINER CONNECTION

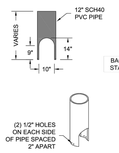
R-TANK TYPICAL EXCAVATION INLET/OUTLET W/ 30 MIL PVC PIPE BOOT DETAIL

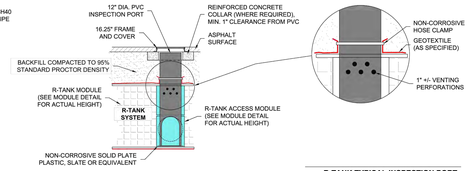


R-TANK^HD TREATMENT ROW SECTION A-A

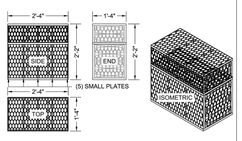
R-TANK^HD TREATMENT ROW SECTION B-B

NOTES
1. THE INSPECTION PORT IS USED IN THE ACCESS 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 AS NEEDED.
3. R-TANK^FC, R-TANK^FD, R-TANK^FT AND R-TANK^TC MAY BE USED IN TRAFFIC APPLICATIONS.
4. SEE TRAFFIC LOADING DETAIL FOR MINIMUM & MAXIMUM COVER REQUIREMENTS.
5. IF INSPECTION PORT IS LOCATED IN A NON-TRAFFIC AREA, A PLASTIC CAP CAN BE USED IN LIEU OF A FRAME AND COVER WITH CONCRETE COLLAR.





R-TANK TYPICAL INSPECTION PORT

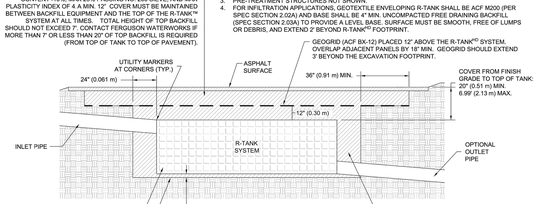


MODULE DATA

GEOMETRY:	**LOAD RATING:**
LENGTH = 28.15 IN. (715 MM)	33.4 PSI, (MODULE ONLY)
WIDTH = 15.75 IN. (400 MM)	HS20-HS25 - SEE SPEC FOR
HEIGHT = 25.98 IN. (660 MM)	COVER REQUIREMENTS
TANK VOLUME = 6.67 CF	**MATERIAL:**
STORAGE VOLUME = 6.33 CF	100% RECYCLED POLYPROPYLENE
VOID INTERNAL VOLUME: 95%	**SMALL PLATES REQUIRED:**
VOID SURFACE AREA: 90%	5/SEGMENT, 10/MODULE

SINGLE + MINI R-TANK^HD - MODULE DETAIL

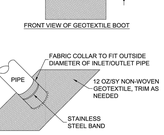
TOTAL COVER: 20" MINIMUM AND 84" MAXIMUM. FIRST 12" MUST BE FREE DRAINING BACKFILL (SPEC SECTION 2.03B): STONE =1.5" OR SOIL (USCS CLASS GW, GP, SW OR SP). ADDITIONAL FILL MAY BE STRUCTURAL FILL (SPEC SECTION 2.05C): STONE OR SOIL (USCS CLASS SM, SP, SW, GM, GP OR GW) WITH MAX CLAY CONTENT=10%, MAX 25% PASSING NO. 200 SIEVE, AND MAX PLASTICITY INDEX OF 4 A MIN. 12". COVER MUST BE MAINTAINED BETWEEN BACKFILL EQUIPMENT AND THE TOP OF THE R-TANK™ SYSTEM AT ALL TIMES. TOTAL HEIGHT OF TOP BACKFILL SHOULD NOT EXCEED 7'. CONTACT FERGUSON WATERWORKS IF MORE THAN 7' OR LESS THAN 20" OF TOP BACKFILL IS REQUIRED (FROM TOP OF TANK TO TOP OF PAVEMENT).



R-TANK^HD & HS-20 LOADS - SECTION VIEW

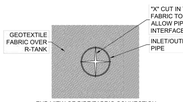
NOTES:
1. FOR COMPLETE MODULE DATA, SEE APPROPRIATE R-TANK^HD MODULE SHEET.
2. INSTALLATIONS PER THIS DETAIL MEET GUIDELINES OF HL-93 LOADING PER THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, CUSTOMARY U.S. UNITS, 7TH EDITION, 2014 WITH 2015 AND 2016 INTERIM REVISIONS.
3. PRE-TREATMENT STRUCTURES NOT SHOWN.
4. FOR INFILTRATION APPLICATIONS, GEOTEXTILE ENVELOPING R-TANK SHALL BE ACF M200 (PER SPEC SECTION 2.02A) AND BASE SHALL BE 4" MIN. UNCOMPACTED FREE DRAINING BACKFILL (SPEC SECTION 2.03A) TO PROVIDE A LEVEL BASE. SURFACE MUST BE SMOOTH, FREE OF LUMPS OR DEBRIS, AND EXTEND 2' BEYOND R-TANK^HD FOOTPRINT.

NOTE:
- PIPE BOOTS ARE AVAILABLE IN THE FOLLOWING STANDARD SIZES: 8" | 12" | 15" | 18" | 24"
- LARGER SPECIAL ORDER, CUSTOM SIZES ARE AVAILABLE.



FRONT VIEW OF GEOTEXTILE BOOT

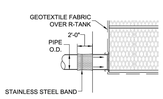
CUT AN "X" IN THE FABRIC ENVELOPE THAT IS SLIGHTLY LARGER THAN THE PIPE, PULL THE FABRIC FLAPS AROUND THE PIPE, AND SEAL WITH A STAINLESS STEEL BAND.



END VIEW OF PIPE/FABRIC CONNECTION

GEOTEXTILE BOOT

AFTER TANK WRAP IS SECURED TO PIPE, SLIDE BOOT AGAINST R-TANK AND SECURE WITH SECOND STAINLESS STEEL BAND, THEN ATTACH BOOT FLAP TO TANK ENVELOPE FABRIC WITH DUCT TAPE OR OTHER ADHESIVE.

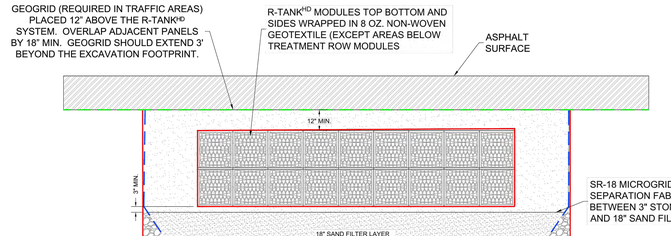


SIDE VIEW OF GEOTEXTILE BOOT



SIDE VIEW OF PIPE/FABRIC CONNECTION

R-TANK TYPICAL TANK INLET/OUTLET W/ GEOTEXTILE PIPE BOOT DETAIL

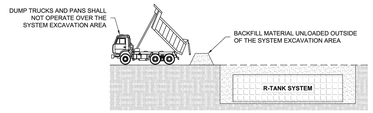


R-TANK QUANTITIES

SYSTEM DESIGNATION	FILTER 1	FILTER 2	FILTER 3	FILTER 4	FILTER 5	FILTER 6
R-TANK^HD MODULE TYPE	SINGLE+MINI	SINGLE+MINI	SINGLE+MINI	SINGLE+MINI	SINGLE+MINI	SINGLE+MINI
TRAFFIC LOAD	HS-20	NON-TRAFFIC	HS-20	HS-20	NON-TRAFFIC	NON-TRAFFIC
# OF SINGLE+MINI R-TANKS	621	485	1075	82	877	171
# OF SINGLE+MINI R-TANK ACCESS MODULES	132	92	211	15	122	40
TOTAL SYSTEM STORAGE	4,901 CF	4,859 CF	11,204 CF	992 CF	5,599 CF	1,794 CF
R-TANK STORAGE VOLUME	4,788 CF	3,854 CF	8,144 CF	614 CF	4,427 CF	1,336 CF
STONE STORAGE VOLUME (40% VOID RATIO)	1,732 CF	1,201 CF	3,060 CF	378 CF	1,182 CF	462 CF
STONE BED FOOTPRINT	2,738 SF	2,265 SF	4,751 SF	469 SF	2,595 SF	879 SF
BACKFILL QUANTITY	473 CY	380 CY	826 CY	88 CY	404 CY	143 CY
N080 NON-WOVEN GEOTEXTILE TANK WRAP	648 SY	531 SY	1,118 SY	87 SY	609 SY	195 SY
N080 NON-WOVEN GEOTEXTILE EXCAVATION WRAP	1,760 SY	1,652 SY	3,086 SY	391 SY	1,677 SY	636 SY
30 MIL PVC LINER	530 SY	526 SY	938 SY	136 SY	507 SY	206 SY
8 OZ. NON-WOVEN GEOTEXTILE TREAT. ROW WRAP	230 SY	199 SY	367 SY	21 SY	213 SY	72 SY
S300 WOVEN GEOTEXTILE TREAT. ROW BASE FABRIC	113 SY	79 SY	180 SY	13 SY	104 SY	34 SY
ACF BX-12 GEOGRID	437 SY	0 SY	763 SY	66 SY	0 SY	0 SY
12" INSPECTION PORTS	13	9	22	2	11	6
GEOTEXTILE PIPE BOOTS (12")	33	21	45	15	33	21
30 MIL. PVC PIPE BOOTS (12")	11	7	15	5	11	7
STORMING CPS (12")	2	2	2	2	2	1
NOTE: STONE QUANTITY INCLUDES 12" OF COVER AND 3" OF BASE.						
NOTE: GEOTEXTILE / LINER QUANTITIES INCLUDE A 15% WASTE FACTOR.						
SEE SHEETS 3 - 14 FOR DETAILS AND ADDITIONAL INFORMATION						

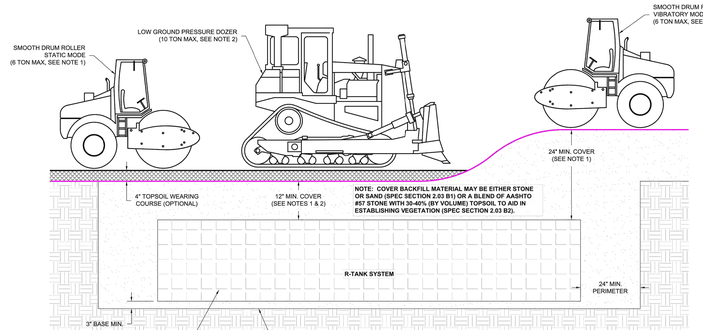
SAND FILTER ELEVATIONS

SYSTEM DESIGNATION	FILTER 1	FILTER 2	FILTER 3	FILTER 4	FILTER 5	FILTER 6
CRUSHED STONE BELOW LINER	13.52	11.67	12.12	8.82	10.87	10.47
7" STONE UNDERDRAIN LAYER	14.02	12.17	12.62	9.32	11.37	10.97
1" AWD STRIP DRAIN	14.27	12.42	12.87	9.57	11.62	11.22
GRAVEL TRANSITION LAYER	14.60	12.75	13.20	9.90	11.95	11.55
18" SAND FILTER LAYER BASE	15.10	13.25	13.70	10.40	12.45	12.05
BASE STONE UNDER TANKS	16.60	14.75	15.20	11.90	13.95	13.55
TANK INV.	16.85	15.00	15.45	12.15	14.20	13.88
TOP OF TANK	19.02	17.17	17.62	14.32	16.37	15.97
GEOGRID / TOP OF STONE	20.02	17.67	18.62	15.32	16.87	16.97
MIN. ALLOW. FINAL GRADE	20.69	18.17	19.29	15.99	17.37	17.64
MAX. ALLOW. FINAL GRADE	26.01	24.18	24.61	21.31	23.36	22.96



DUMP TRUCK DETAIL (SEE NOTE 3)

NOTES:
1. FOLLOWING PLACEMENT OF SIDE BACKFILL, A UNIFORM 12" LIFT OF THE FREELY DRAINING MATERIAL (SPEC SECTION 2.03 B2) SHALL BE PLACED OVER THE R-TANK AND LIGHTLY COMPACTED USING A WALK-BEHIND TRENCH ROLLER. ALTERNATELY, A ROLLER (MAXIMUM GROSS VEHICLE WEIGHT OF 6 TONS) MAY BE USED. ROLLER MUST REMAIN IN STATIC MODE UNTIL A MINIMUM OF 24" OF COVER HAS BEEN PLACED OVER THE MODULES. SHEEP FOOT ROLLERS SHOULD NOT BE USED. **SPEC SECTION 3.05 A5**
2. ONLY LOW PRESSURE TIRE OR TRACK VEHICLES (LESS THAN 7 PSI AND OPERATING WEIGHT OF LESS THAN 20,000 LBS) SHALL BE OPERATED OVER THE R-TANK SYSTEM DURING CONSTRUCTION. **SPEC SECTION 3.05 A5**
3. DUMP TRUCKS AND PANS SHALL NOT BE OPERATED WITHIN THE R-TANK SYSTEM AT ANY TIME. WHERE NECESSARY, THE HEAVY EQUIPMENT SHOULD UNLOAD IN AN AREA ADJACENT TO THE R-TANK SYSTEM AND THE MATERIAL SHOULD BE MOVED OVER THE SYSTEM WITH TRACKED EQUIPMENT. **SPEC SECTION 3.05 A5**
4. ENSURE THAT ALL UNRELATED CONSTRUCTION TRAFFIC IS KEPT AWAY FROM THE LIMITS OF EXCAVATION UNTIL THE PROJECT IS COMPLETE AND FINAL SURFACE MATERIALS ARE IN PLACE. NO NON-INSTALLATION RELATED LOADING SHOULD BE ALLOWED OVER THE R-TANK SYSTEM UNTIL THE FINAL DESIGN SECTION HAS BEEN CONSTRUCTED (INCLUDING PAVEMENT). **SPEC SECTION 3.05 B**
5. SEE R-TANK INSTALLATION GUIDE OR CONTACT YOUR LOCAL FERGUSON REPRESENTATIVE FOR ADDITIONAL INFORMATION.



CONSTRUCTION EQUIPMENT COVER DETAIL - GREEN SPACE

R-TANK SPECIFICATION

PART 1 - GENERAL
1.01 RELATED DOCUMENTS
A. Drawings, technical specification and general provisions of the Contract as modified herein apply to this section.

1.02 DESCRIPTION OF WORK INCLUDED
A. Provide excavation and base preparation per geotechnical engineer's recommendations and/or as shown on the design drawings, to provide adequate support for project design loads and safety from excavation sidewall collapse. Excavations shall be in accordance with the owner's and OSHA requirements.
B. Provide and install R-TanksLD/, R-TankHD/, R-TankSD/, or R-TankLID/ system (hereafter called R-Tank) and all related products including fill materials, geotextiles, geogrids, inlet and outlet pipe with connections per the manufacturer's installation guidelines provided in this section.
C. Provide and construct the cover of the R-Tank system including; stone backfill, structural fill cover, and pavement section as specified.
D. Protect R-Tank system from construction traffic after installation until completion of all construction activity in the installation area.

1.03 QUALITY CONTROL
A. All materials shall be manufactured in ISO certified facilities.
B. Installation Contractor shall demonstrate the following experience:
1. A minimum of three R-Tank or equivalent projects completed within 2 years; and,
2. A minimum of 25,000 cubic feet of storage volume completed within 2 years.
3. Contractor experience requirement may be waived if the manufacturer's representative provides on-site training and review during construction.
C. Installation Personnel: Performed only by skilled workers with satisfactory record of performance on bulk earthworks, pipe, chamber, or pond/landfill construction projects of comparable size and quality.
D. Contractor must have manufacturer's representative available for site review if requested by Owner.

1.04 SUBMITTALS
A. Submit proposed R-Tank layout drawings. Drawings shall include typical section details as well as the required base elevation of stone and tanks, minimum cover requirements and tank configuration.
B. Submit manufacturer's product data, including compressive strength and unit weight.
C. Submit manufacturer's installation instructions.
D. Submit R-Tank sample for review. Reviewed and accepted samples will be returned to the Contractor.
E. Submit material certificates for geotextile, geogrid, base course and backfill materials.
F. Submit required experience and personnel requirements as specified in Section 1.03.
G. Any proposed equal alternative product substitution to this specification must be submitted for review and approved prior to bid opening. Review package should include third party reviewed performance data that meets or exceeds criteria in Table 2.01 B.

1.05 DELIVERY, STORAGE, AND HANDLING
A. Protect R-Tank and other materials from damage during delivery, and store UV sensitive materials under tarp to protect from sunlight when time from delivery to installation exceeds two weeks. Storage of materials shall be on smooth surfaces, free from dirt, mud and debris.
B. Handling is to be performed with equipment appropriate to the materials and site conditions, and may include hand, handcart, forklifts, extension lifts, etc.
C. Cold weather:
1. Care must be taken when handling plastics when air temperature is 40 degrees or below as plastic becomes brittle.
2. Do not use frozen materials or materials mixed or coated with ice or frost.
3. Do not build on frozen ground or wet, saturated or muddy subgrade.

1.06 PREINSTALLATION CONFERENCE.
A. Prior to the start of the installation, a preinstallation conference shall occur with the representatives from the design team, the general contractor, the excavation contractor, the R-Tank installation contractor, and the manufacturer's representative.

1.07 PROJECT CONDITIONS
A. Coordinate installation of the R-Tank system with other on-site activities to eliminate all non-installation related construction traffic over the completed R-Tank system. No loads heavier than the design loads shall be allowed over the system, and in no case shall loads higher than a standard AASHTO HS20 (or HS25, depending on design criteria) load be allowed on the system at any time.
B. Protect adjacent work from damage during R-Tank system installation.
C. All pre-treatment systems to remove debris and heavy sediments must be in place and functional prior to operation of the R-Tank system. Additional pretreatment measures may be needed if unit is operational during construction due to increased sediment loads.
D. Contractor is responsible for any damage to the system during construction.

PART 2 - PRODUCTS
2.01 R-TANK UNITS
A. R-Tank - Injection molded plastic tank plate assembled to form a 95% void modular structure of predesigned height (custom for each project).
B. R-Tank units shall meet the following Physical & Chemical Characteristics:

PROPERTY	DESCRIPTION	R-Tank^FC VALUE	R-Tank^FD VALUE	R-Tank^FT VALUE
Void Area	Volume available for water storage	95%	95%	95%
Surface Void Area	Percentage of exterior available for infiltration	40%	56%	40%
Vertical Compressive Strength	ASTM D 2412 / ASTM F 2418	35.0 psi	33.4 psi	42.8 psi
Lateral Compressive Strength	ASTM D 2412 / ASTM F 2418	20.0 psi	23.4 psi	39.4 psi
HS-20 Minimum Cover	Cover required to support HS-20 loads	N/A	0"	12"
HS-25 Minimum Cover	Cover required to support HS-25 loads	N/A	0"	12"
Maximum Cover	Maximum allowable cover depth	3 feet	< 3 feet	< 10 feet
Unit Weight	Weight of plastic per cubic foot of tank	3.66 lbs / cf	3.66 lbs / cf	4.33 lbs / cf
Rig Thickness	Thickness of load bearing members	0.18 inches	0.18 inches	0.18 inches
Service Temperature	Temperature range for use	-10 ~ 120° F	-10 ~ 120° F	-10 ~ 120° F

C. Supplier: Ferguson Waterworks 2831 Cardwell Road Richmond, VA 23234 (T): 800-448-3636; (F): 804-743-7779 www.ferguson.com

2.02 GEOSYNTHETICS
A. Geotextile. A geotextile envelope is required to prevent backfill material from entering the R-Tank modules
1. Standard Application: The standard geotextile shall be an 8 oz per square yard nonwoven geotextile (ACF N080 or equivalent).
2. Infiltration Applications: When water must infiltrate through the geotextile as a function of the system design, a woven monofilament (ACF M200 or equivalent) shall be used.
B. Geogrid. For installations subject to traffic loads and/or when required by project plans, install geogrid (ACF BX12 or equivalent) to reinforce backfill above the R-Tank system. Geogrid is not always required for R-TankLID applications, and is often not required for non-traffic load applications.

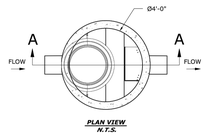
2.03 BACKFILL & COVER MATERIALS
A. Backfill Materials: Stone (angular and smaller than 1.5" in diameter) or soil (GW, GP, SW, or SP as classified by the Unified Soil Classification System) shall be used below the R-Tank system (3" minimum). Material must be free from lumps, debris, and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation. For infiltration applications backfilling material shall be free draining.
B. Side and Top Backfill: Material must be free from lumps, debris and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation.
1. Traffic Applications - Free draining material shall be used adjacent to (24" minimum) and above (for the first 12") the R-Tank system.
a. For HD, and SD modules, backfill materials shall be free draining stone (angular and smaller than 1.5" in diameter) or soil (GW, GP, SW, or SP as classified by the Unified Soil Classification System).
b. For LID modules with less than 14" of top cover, backfill materials shall be free draining stone (angular and smaller than 1.5" in diameter). The use of soil backfill on the sides and top of the LID module is not permitted unless the modules are installed outside of traffic areas or with cover depths of 14" or more. Top backfill material (from top of module to bottom of pavement base or 12" maximum) must be consistent with side backfill.
2. Non-Traffic / Green Space Applications - For all R-Tank modules installed in green spaces and not subjected to vehicular loads, backfill materials may either follow the guidelines for Traffic Applications above, or the top backfill layer (12" minimum) may consist of AASHTO #57 stone blended with 30-40% (by volume) topsoil to aid in establishing vegetation.
C. Additional Cover Materials: Structural Fill shall consist of granular materials meeting the gradational requirements of SM, SP, SW, GM, GP or GW as classified by the Unified Soil Classification System. Structural fill shall have a maximum of 25 percent passing the No. 200 sieve, shall have a maximum clay content of 10 percent and a maximum Plasticity Index of 4. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation.

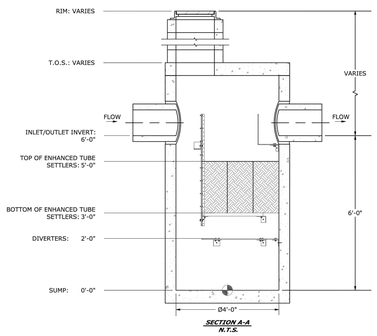
2.04 OTHER MATERIALS
A. Utility Marker: Install metallic tape at corners of R-Tank system to mark the area for future utility detection.

PART 3 - EXECUTION
3.01 ASSEMBLY OF R-TANK UNITS
A. Assembly of modules shall be performed in accordance with the R-Tank Installation Manual, Section 2.

3.02 LAYOUT AND EXCAVATION
A. Installer shall stake out, excavate, and prepare the subgrade area to the required plan grades and dimensions, ensuring that the excavation is at least 2 feet greater than R-Tank dimensions in each direction allowing for installation of geotextile filter fabric, R-Tank modules, and free draining backfill materials.
B. All excavations must be prepared with OSHA approved excavated sides and sufficient working space.
C. Protect partially completed installation against damage from other construction traffic by establishing a perimeter with high visibility construction tape, fencing, barricades, or other means until construction is complete.
D. Base of the excavation shall be uniform, level, and free of lumps or debris and soft or yielding subgrade areas. A minimum 2,000 pounds per square foot bearing capacity is required.
1. Standard Applications: Compact subgrade to a minimum of 95% of Standard Proctor (ASTM D698) density or as required by the Owner's engineer.
2. Infiltration Applications: Subgrade shall be prepared in accordance with the contract documents. Compaction of subgrade should not be performed in infiltration applications.
E. Unsuitable Soils or Conditions: All questions about the base of the excavation shall be directed to the owner's engineer, who will approve the subgrade conditions prior to placement of stone. The owner's engineer shall determine the required bearing capacity of the R-Tank subgrade; however in no case shall a bearing capacity of less than 2,000 pounds per square foot be provided.
1. If unsuitable soils are encountered at the subgrade, or if the subgrade is pumping or appears excessively soft, repair the area in accordance with contract documents and/or as directed by the owner's engineer.
2. If indications of the water table are observed during excavation, the engineer shall be contacted to provide recommendations.
3. Do not start installation of the R-Tank system until unsatisfactory subgrade conditions are corrected and the subgrade conditions are accepted by the owner's engineer.

3.03 PREPARATION OF BASE
A. Place a thin layer (3" unless otherwise specified) of bedding material (Section 2.03 A), over the subgrade to establish a level working platform for the R-Tank modules. Level to within ¼"





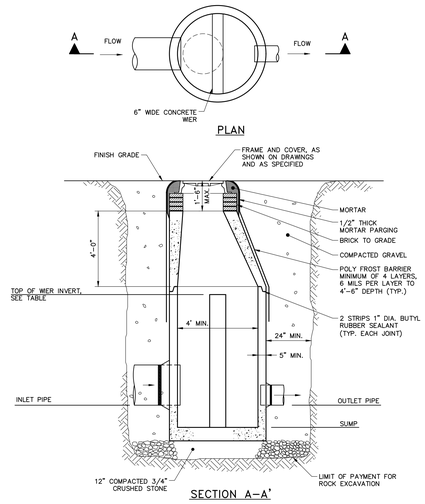
GENERAL NOTES:

1. CONCRETE COMPONENTS SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C478.
2. CONTRACTOR TO INSTALL THE STRUCTURE IN ACCORDANCE WITH ASTM C1821.
3. CONTRACTOR TO PROVIDE ALL LABOR AND EQUIPMENT REQUIRED TO OFFLOAD AND INSTALL UNIT.
4. CONTRACTOR TO PROVIDE AND INSTALL ALL PIPES, FRAMES, COVERS, HATCHES, AND RISERS UNLESS SPECIFIED OTHERWISE.
5. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS.

NOTE: PROVIDE STORMSETTLER BY STORMTRAP OR APPROVED EQUAL.

HYDRODYNAMIC SEPARATOR

N.T.S.



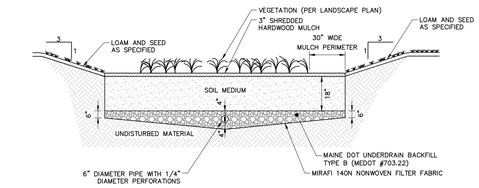
NOTE:
1. SEE STRUCTURE TABLE FOR DIMENSIONS.

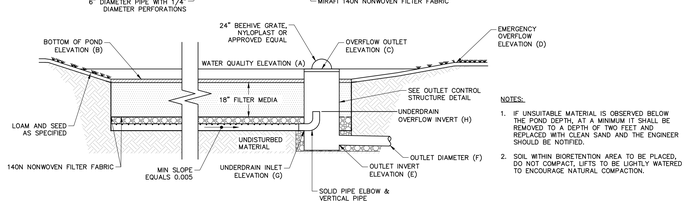
DIVERSION MANHOLE DETAIL

N.T.S.

DIVERSION STRUCTURE DIMENSIONS/ ELEVATIONS	
LOCATION	TOP OF WEIR B (ELEV)
DMH2 (DIV.)	17.50
DMH6 (DIV.)	17.90
DMH12 (DIV.)	16.90
DMH15 (DIV.)	16.20
DMH24 (DIV.)	14.50
DMH32 (DIV.)	16.20
DMH33 (DIV.)	13.60
DMH37 (DIV.)	15.70

BIORETENTION BASIN DIMENSIONS/ ELEVATION (FEET)								
LOCATION	A (ELEV)	B (ELEV)	C (ELEV)	D (ELEV)	E (ELEV)	F (ELEV)	G (ELEV)	H (ELEV)
BIORETENTION BASIN 1	19.50	19.00	19.50	21.25	15.00	1.00	16.34	17.84
BIORETENTION BASIN 2	14.50	14.00	14.50	14.80	10.50	1.00	11.34	12.84
BIORETENTION BASIN 3	13.00	12.50	13.00	13.80	9.00	1.00	9.84	11.34





NOTES:

1. IF UNSUITABLE MATERIAL IS OBSERVED BELOW THE POND DEPTH, AT A MINIMUM IT SHALL BE REMOVED TO A DEPTH OF TWO FEET AND REPLACED WITH CLEAN SAND AND THE ENGINEER SHOULD BE NOTIFIED.
2. SOIL WITHIN BIORETENTION AREA TO BE PLACED, DO NOT COMPACT, LIFTS TO BE LIGHTLY WATERED TO ENCOURAGE NATURAL COMPACTION.

BIORETENTION BASIN

N.T.S.

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

Woodard & Curran

LAND-USE PERMIT SET

NOT FOR CONSTRUCTION

Number	Revision	Date

STATE OF MAINE
AMY N. LEBEL
17065
LICENSED
PROFESSIONAL ENGINEER

Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 OCTOBER 2023
Scale	AS NOTED

Drawing Title
CIVIL DETAILS - 7

D-407

THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
PHASE 1
PORTLAND, MAINE

LAND-USE PERMIT SET

MARCH 27, 2024

NOT FOR CONSTRUCTION



PROJECT LOCATION MAP

DRAWING INDEX	
SHEET TITLE	SHEET DESCRIPTION
G-000	COVER
G-001	GENERAL NOTES, LEGEND & ABBREVIATIONS
C-001	DEMOLITION PLAN – 1
C-002	DEMOLITION PLAN – 2
C-100	OVERALL SITE LAYOUT PLAN
C-101	SITE LAYOUT PLAN – 1
C-102	SITE LAYOUT PLAN – 2
C-201	SITE UTILITY PLAN – 1
C-202	SITE UTILITY PLAN – 2
C-301	GRADING & DRAINAGE PLAN – 1
C-302	GRADING & DRAINAGE PLAN – 2
C-303	PLAN INSETS
C-304	LAYOUT, STRUCTURE & PIPE TABLES
D-401	CIVIL DETAILS – 1
D-402	CIVIL DETAILS – 2
D-403	CIVIL DETAILS – 3
D-404	CIVIL DETAILS – 4
D-405	CIVIL DETAILS – 5
D-406	CIVIL DETAILS – 6
D-407	CIVIL DETAILS – 7



SITE LOCATION MAP

SOURCE: USGS TOPO QUADRANGLE

IDEALS
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Drawing Title
COVER

G-000

CIVIL GENERAL NOTES

1. SITE AND TOPOGRAPHIC DATA PROVIDED BY ON THE GROUND SURVEY PERFORMED BY VHB, 500 SOUTHBOROUGH DRIVE, SUITE 105B, SOUTH PORTLAND, MAINE 04106 (207).889.3150. PLAN ENTITLED "EXISTING CONDITIONS SURVEY, RECORD OWNER: THE INITIATIVE FOR DIGITAL ENGINEERING AND LIFT SCIENCE, 1 BEAN POT CIRCLE, CITY OF PORTLAND, COUNTY OF CUMBERLAND, STATE OF MAINE" DATED: 9/15/2023
2. VERTICAL DATUM IS REFERENCED TO CITY DATUM WITH ONE FOOT CONTOUR INTERVALS. CITY DATUM IS +0.02 FT NGVD 1929. HORIZONTAL DATUM IS REFERENCED TO STATE PLANE NAD 1983 (FEET), MAINE WEST ZONE.
3. THE ENTIRE SITE SHALL BE DEVELOPED AND/OR MAINTAINED AS DEPICTED ON THE SITE PLAN. APPROVAL OF THE PLANNING AUTHORITY OR PLANNING BOARD SHALL BE REQUIRED FOR ANY ALTERATION TO OR DEVIATION FROM THE APPROVED SITE PLAN, INCLUDING, WITHOUT LIMITATION: TOPOGRAPHY, DRAINAGE, LANDSCAPING, RETENTION OF WOODED OR LAWN AREAS, ACCESS, SIZE, LOCATION, AND SURFACING OF PARKING AREAS, AND LOCATION AND SIZE OF BUILDINGS.
4. THE CONTRACTOR SHALL CALL "DIG SAFE" AT 811 AT LEAST 72 HOURS PRIOR TO EXCAVATION IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL SAFETY CODES.
5. PROPERLY PROTECT AND DO NOT DISTURB PROPERTY IRONS AND MONUMENTS. IF DISTURBED, THE PROPERTY MONUMENT SHALL BE RESET AT THE CONTRACTOR'S EXPENSE BY A LICENSED LAND SURVEYOR ACCEPTABLE TO THE CITY. PROPERTY MONUMENTS SHALL BE RESET IN ACCORDANCE WITH CITY OF PORTLAND STANDARDS.
6. 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.
7. 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, PORTLAND WATER DISTRICT 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.
8. 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.
9. LAND OUTSIDE THE PROPOSED LIMIT OF WORK SHALL NOT BE DISTURBED BY THE CONTRACTOR. ANY LAND OUTSIDE LIMIT OF WORK DISTURBED BY CONTRACTOR SHALL BE RESTORED BY CONTRACTOR AT NO EXPENSE TO OWNER.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL CONTROL POINTS AND BENCH MARKS NECESSARY FOR THE WORK.
11. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL SAFETY CODES, REGULATIONS, LEGAL REQUIREMENTS, PERMIT CONDITIONS, ETC.
12. THE CONTRACTOR SHALL TAKE ADEQUATE PRECAUTIONS TO PROTECT ALL WALKWAYS, 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.
13. THE CONTRACTOR SHALL PROVIDE ADEQUATE BRACING AND SHORING OF ALL EXCAVATIONS IN ACCORDANCE WITH THE REQUIREMENTS OF ALL GOVERNING CODES AND REGULATIONS.
14. SAWCUTS IN EXISTING PAVEMENT SHALL BE SMOOTH AND STRAIGHT. EXISTING PAVEMENT SHALL BE SAWCUT AND BUTTED TO THE NEW PAVEMENT. NO FEATHERING OF PAVEMENT WILL BE PERMITTED.
15. WORK WITHIN PUBLIC RIGHT-OF-WAY SHALL COMPLY WITH APPLICABLE CITY OF PORTLAND AND STATE REQUIREMENTS.
16. ALL CURB DAMAGED DURING CONSTRUCTION SHALL BE REPLACED IN KIND AND SHALL CONFORM TO CITY OF PORTLAND SPECIFICATIONS. COST IS INCIDENTAL TO CONTRACT.
17. ALL FULL DEPTH PAVEMENT REPLACEMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF PORTLAND TECHNICAL STANDARDS.
18. ALL WORK WITHIN THE RIGHT OF WAY OF CITY STREETS SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY TRAFFIC ENGINEER. THE CONTRACTOR SHALL SUBMIT A PROPOSED TRAFFIC CONTROL PLAN TO THE TRAFFIC ENGINEER AT LEAST 7 DAYS BEFORE BEGINNING CONSTRUCTION IN ANY STREET. THE PROPOSED TRAFFIC CONTROL PLAN SHALL BE SUBJECT TO APPROVAL BY THE TRAFFIC ENGINEER, WHO MAY ATTACH SPECIAL CONDITIONS TO, OR REQUIRE MODIFICATIONS OF, THE TRAFFIC CONTROL PLAN. WORK SHALL NOT BEGIN UNTIL THE PLAN IS APPROVED BY THE TRAFFIC ENGINEER.
19. THE CONTRACTOR SHALL OBTAIN A CITY STREET OPENING PERMIT BEFORE BEGINNING CONSTRUCTION. THE CONTRACTOR WILL ALSO BE REQUIRED TO HAVE A CURRENT EXCAVATOR'S LICENSE IN THE CITY.
20. ALL WORK IN THE PUBLIC R.O.W. SHALL BE COMPLETED IN ACCORDANCE WITH THE CITY'S TECHNICAL MANUAL ARTICLES VI, VII, AND IX OF CHAPTER 25-STREETS, SIDEWALKS, AND OTHER PUBLIC PLACES OF THE CITY OF PORTLAND CODE OF ORDINANCES.
21. ALL SEWER CONSTRUCTION IN THE PUBLIC WAY SHALL BE COMPLETED IN ACCORDANCE WITH ARTICLE II OF CHAPTER 24-SEWERS OF THE CITY OF PORTLAND CODE OF ORDINANCES.
22. ALL WATER DISTRIBUTION CONSTRUCTION IN THE PUBLIC WAY SHALL BE COMPLETED IN ACCORDANCE WITH PORTLAND WATER DISTRICT STANDARDS.
23. CONTACT CITY OF PORTLAND ARBORIST AND ENGINEER PRIOR TO CUTTING ROOTS, TRIMMING BRANCHES, OR DISTURBING TREES WITHIN THE R.O.W. THAT NOT HAVE BEEN NOTED FOR REMOVAL ON THE PLANS.
24. IF IMPORTED FILL MATERIAL IS REQUIRED, IT SHALL BE CERTIFIED IN WRITING BY CONTRACTOR 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.
25. 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.
26. ALL MATERIAL SHALL BE FURNISHED BY CONTRACTOR UNLESS OTHERWISE NOTED.
27. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF ALL DIMENSIONS PRIOR TO START OF CONSTRUCTION.
28. RESTRICT ACCESS TO SITE THROUGH THE USE OF APPROPRIATE SIGNAGE, BARRIERS, FENCES, ETC. SITE SHALL BE LEFT WITH APPROPRIATE SAFETY MEASURES IN PLACE DURING NON-WORKING HOURS. NO TRENCH SHALL BE LEFT OPEN DURING NON-WORKING HOURS. SITE SAFETY IS THE RESPONSIBILITY OF CONTRACTOR, DURING BOTH WORKING AND NON-WORKING HOURS.
29. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION PERMITS. PERMIT APPLICATIONS SHALL BE SUBMITTED WITH ADEQUATE TIME SO AS NOT TO DELAY CONSTRUCTION.
30. 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. 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. CONTRACTOR SHALL PREPARE AND SUBMIT A NOTICE OF TERMINATION TO THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, UPON COMPLETION OF THE CONSTRUCTION PROJECT. SUBMIT A COPY OF THE INSPECTION RECORDS AND THE NOTICE OF TERMINATION TO THE OWNER AND ARCHITECT. A DRAFT OF THE NOTICE WILL BE PROVIDED TO THE OWNER AND THE OWNER'S REPRESENTATIVE FOR REVIEW PRIOR TO SUBMISSION.
31. THE UTILITY LOCATIONS SHOWN IN PLAN AND PROFILE ARE APPROXIMATE AND REQUIRE FIELD VERIFICATION BY THE CONTRACTOR. CONTACT THE ENGINEER AND OWNER IMMEDIATELY UPON DISCOVERING ANY CONFLICTS WITH EXISTING AND PROPOSED UTILITY LOCATIONS. NOT ALL EXISTING UTILITIES ARE SHOWN ON PLANS.
32. CONTRACTOR SHALL CLEAN AND/OR FLUSH ALL MANHOLES, CATCH BASINS, AND ASSOCIATED PIPING AFTER THE WORK HAS BEEN COMPLETED.
33. CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITY WITH UTILITY COMPANIES, EMERGENCY SERVICES AND CITY. NOTIFY UTILITY COMPANIES WITHIN 48 HOURS OF WORK ACTIVITY ADJACENT TO THOSE UTILITIES.
34. CONTRACTOR SHALL SEQUENCE THE WORK SO AS TO MAINTAIN UTILITY SERVICES FOR EXISTING OPERATIONS ON AND ADJACENT TO THE SITE. CONTRACTOR SHALL PROVIDE A PLAN FOR TEMPORARY UTILITY SERVICES OR AS REQUIRED. THE PLAN SHALL BE STAMPED BY A PROFESSIONAL ENGINEER AND SUBMITTED TO OWNER. ENGINEER AND UTILITY FOR ACCEPTANCE A MINIMUM OF 14 DAYS PRIOR TO START OF UTILITY WORK.
35. EXISTING FACILITIES (I.E. SIGNS, POLES, LIGHT POSTS, 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 CITY AT CONTRACTOR'S EXPENSE.
36. A COMPLETE SET OF "RECORD" DRAWINGS THAT REFLECT ANY AND ALL MODIFICATIONS TO THE SANITARY SEWER SYSTEM, WATER DISTRIBUTION SYSTEM, STORM SEWER SYSTEM AND ANY OTHER UTILITY INSTALLATIONS OR ALTERATIONS WITHIN THE PROJECT LIMITS SHALL BE SUBMITTED TO THE CITY OF PORTLAND. THESE DRAWINGS SHALL BE SUBMITTED IN BOTH DIGITAL (ACAD) AND HARD COPY FORMAT AS DEFINED IN THE SPECIFICATIONS PRIOR TO PAYMENT OF FINAL RETAINAGE.
37. ALL UTILITY SERVICES AND MAINS ARE APPROXIMATE AS SHOWN. CONTRACTOR SHALL FIELD VERIFY LOCATION OF EXISTING SERVICES AND MAINS AND RELOCATE AS REQUIRED TO COMPLETE WORK. CONTRACTOR SHALL COORDINATE WORK WITH THE CITY OF PORTLAND, PORTLAND WATER DISTRICT, UNITIL, CMP, AND ANY OTHER UTILITY OWNERS AND PROPERTY OWNERS.
38. WORK IS PROPOSED IN CLOSE PROXIMITY TO EXISTING UTILITIES. CONTRACTOR SHALL PROTECT EXISTING UTILITIES DURING CONSTRUCTION.
39. CAPPED PIPE STUB LOCATIONS SHALL BE MARKED WITH EMBEDDED STAKE AND A MINIMUM OF THREE TIES SHALL BE RECORDED. EMBEDDED STAKE SHALL BE 2X4 WITH PK NAIL DRIVEN IN TOP, LENGTH AS REQUIRED TO SPAN FROM TOP OF PIPE TO 6" BELOW GRADE. LOCATION AND ELEVATION OF PIPE STUB SHALL BE PROVIDED. WARNING TAPE AND WIRE SHALL BE INSTALLED OVER PIPE STUBS IN ACCORDANCE WITH SPECIFICATIONS.
40. ALL SIGNAGE SHALL CONFORM WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
41. ACTIVITIES THAT HAVE THE POTENTIAL TO DISTURB SOIL SUCH AS UTILITY AND SUBSURFACE STRUCTURE INSTALLATION/RELOCATION WORK, FOUNDATION INSTALLATION, GRADING, PAVING, AND LANDSCAPING SHALL BE CONDUCTED IN ACCORDANCE WITH THE PROJECT 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.
42. ALL NEW BURIED WATER PIPE SHALL HAVE A MINIMUM 5 FEET COVER UNLESS NOTED OTHERWISE OR APPROVED BY THE ENGINEER. BURIED PIPE WITH LESS THAN 4 FEET OF COVER SHALL HAVE A MINIMUM OF 4 INCHES OF RIGID INSULATION WITH AN R-VALUE OF R-20 INSTALL IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
43. WHERE NEW WATER MAINS OF APPURTENANCES ARE TO BE CONNECTED TO EXISTING PIPE, CONTRACTOR SHALL CUT AND REMOVE THE EXISTING PIPE AS NECESSARY TO INSTALL THE NEW WORK. TEST PIT LOCATIONS WHERE NEW MAINS CONNECT TO EXISTING MAINS TO VERIFY PIPE DIAMETER AND MATERIAL TYPE.
44. SOLID SLEEVES ARE SHOWN ON THE DRAWINGS FOR ALL CONNECTIONS TO EXISTING WATER MAIN. IF OUTER DIAMETER OF EXISTING WATER MAIN IS FOUND TO BE GREATER THAN THE MAXIMUM OUTER DIAMETER COMPATIBLE WITH SOLID SLEEVES, CONTRACTOR SHALL INSTALL A COUPLING TO COMPLETE CONNECTION WITH EXISTING WATER MAIN.
45. BACKFLOW PREVENTERS SHALL BE PROVIDED AT ALL BUILDING SANITARY SEWER SERVICE OUTLETS.
46. A DEWATERING PLAN SHALL BE SUBMITTED TO THE CITY OF PORTLAND WATER RESOURCE COMPLIANCE COORDINATOR PRIOR TO ANY EXCAVATION WORK AND DEWATERING ACTIVITIES IN ACCORDANCE WITH CITY OF PORTLAND RULES AND REGULATIONS FOR USE OF THE SEWER SYSTEM CHAPTER 8..

CIVIL LEGEND

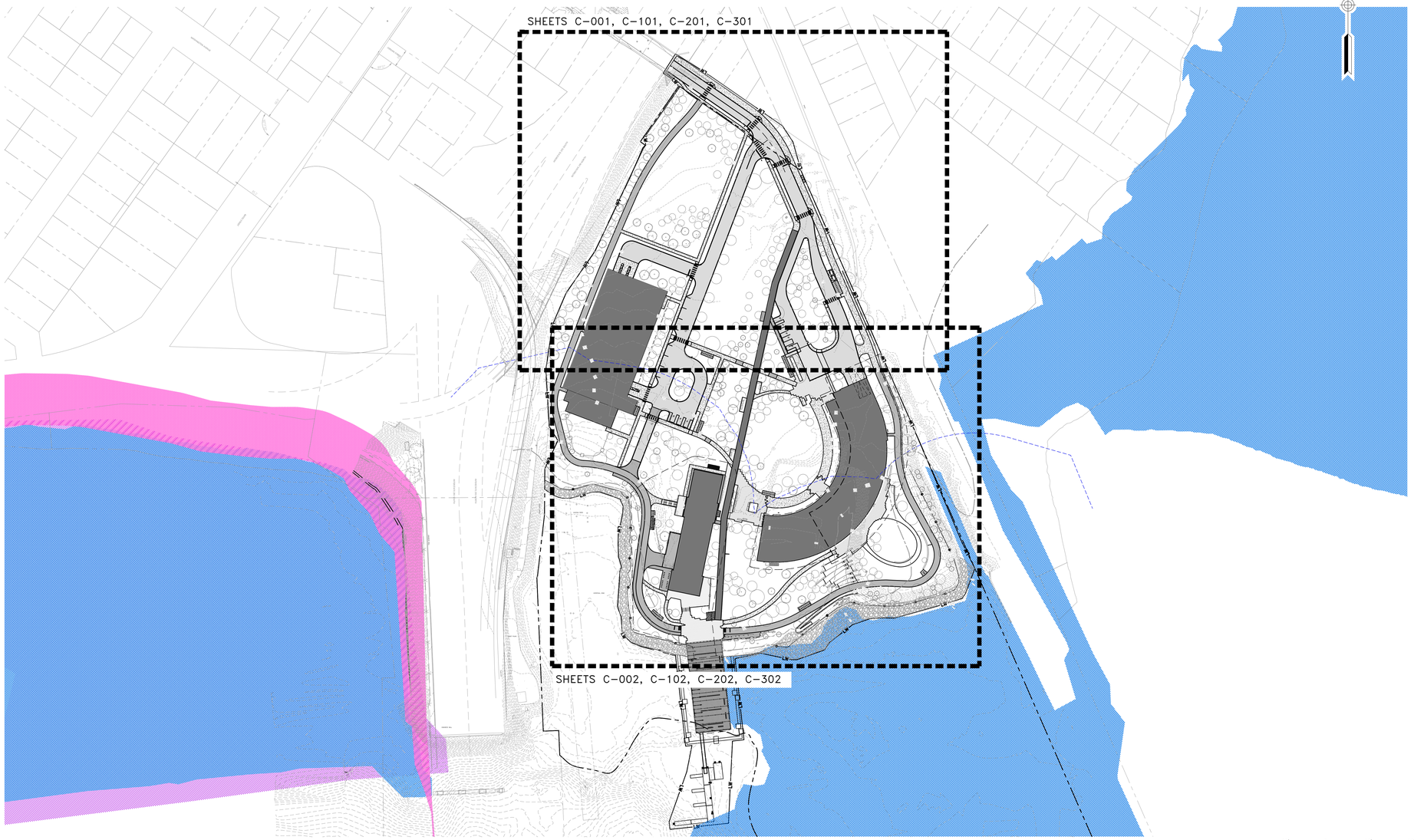
EXISTING		PROPOSED
	CONTOUR (1' INTERVAL)	
	CONTOUR (INDEX)	
S	SANITARY SEWER	S
SD	STORM DRAIN	SD
UD	UNDERDRAIN	UD
W	WATER LINE	W
E	UNDERGROUND ELECTRIC	
	UNDERGROUND TELECOMMUNICATIONS	
G	GAS LINE	
OE	OVERHEAD ELECTRIC	OE
	PROPERTY LINE	
	EDGE OF VEGETATION	
X X	FENCE	
	RETAINING WALL	
	GRANITE CURB	
	FLUSH CURB	
	SLOPE GRANITE CURB	
	TIPDOWN	
	EDGE OF PAVEMENT	
	EDGE OF GRAVEL	
T T T T T	GUARDRAIL	T T T T T
	RAILROAD TRACKS	
	ROOF OVERHANG	
	SEDIMENT BARRIER	
	LIMIT OF WORK	LW
	250' SHORELAND ZONE BOUNDARY	
	SIDEWALK	
	BITUMINOUS PAVEMENT	
	CONCRETE	
	BUILDING FOOTPRINT	
	BLUE MUSSEL HABITAT	
	SOFTSHELL CLAM HABITAT	
	TIDAL WATERFOWL & WADING BIRD HABITAT	
	MAINE SHOREBIRD AREAS	

CIVIL LEGEND

EXISTING		PROPOSED
S	SANITARY SEWER MANHOLE	S
CO	CLEAN OUT	CO
D	DRAINAGE MANHOLE	D
	CATCH BASIN	
	AREA DRAIN	
E	ELECTRICAL MANHOLE	E
T	TELECOMMUNICATIONS MANHOLE	T
TELE BOX	TELEPHONE STAND BOX	
GM	GAS METER BOX	
	GAS VENT	
	GAS GATE	
	TRANSFORMER	
	UTILITY POLE	
	UTILITY POLE WITH GUY	
	LIGHTPOST	
	WATER GATE VALVE	
	CURB STOP	
	REDUCER	
	SOLID SLEEVE	
	WATER SHUT OFF VALVE	
	HYDRANT	
W	WATER METER BOX	W
	PROPERTY MONUMENT	
MB	MAIL BOX	
	STREET AND MISCELLANEOUS SIGNS	
FP	FLAGPOLE	
XXX.XX	SPOT ELEVATION	XXX.XX
	TREE/SHRUB	
	BOLLARD	
CAM	SECURITY CAMERA	CAM
TEL	BLUE LIGHT INTERCOM	TEL

CIVIL ABBREVIATIONS

&	AND	N.I.C.	NOT IN CONTRACT
A.G.	ABOVE GROUND	NO.	NUMBER
		NR	NO REFUSAL
BC	BOTTOM OF CURB	N.T.S.	NOT TO SCALE
BIT	BITUMINOUS		
BW	BOTTOM OF WALL	OE	OVERHEAD ELECTRIC
B/W	BETWEEN	OH	OVERHEAD
CB	CATCH BASIN	±	PLUS OR MINUS
CI	CAST IRON	LLS	LICENSED LAND SURVEYOR
CMP	CENTRAL MAINE POWER	PROP.	PROPOSED
CMP	CORRUGATED METAL PIPE	PT.	POINT
CONC	CONCRETE	PVC	POLYVINYL CHLORIDE
DI	DUCTILE IRON	R.O.W.	RIGHT-OF-WAY
DIA.	DIAMETER	RCP	REINFORCED CONCRETE PIPE
DMH	DRAIN MANHOLE	REINF.	REINFORCED
DTL.	DETAIL	REQ'D	REQUIRED
E	UNDERGROUND ELECTRICAL	S	SLOPE (FT./FT.)
EL.	ELEVATION	S	SEWER
E.O.P.	EDGE OF PAVEMENT	SD	STORM DRAIN
EXIST.	EXISTING	SMH	SEWER MANHOLE
		SCH	SCHEDULE
FF	FINISH FLOOR	STA.	STATION
FM	FORCEMAIN		
FT	FOOT/FEET	TS	TOP OF STAIRS
		TW	TOP OF WALL
G	GAS MAIN	TYP.	TYPICAL
GS	GAS SERVICE		
GALV.	GALVANIZED	UP	UTILITY POLE
GRAN.	GRANITE		
		VC	VITRIFIED CLAY
HDPE	HIGH DENSITY POLYETHYLENE	VIT.	VITRIFIED CLAY
HYD	HYDRANT		
		W	WEST
INV.	INVERT	W	WATER
		W/	WITH
LF	LINEAR FEET	W	WATERMAIN
		WS	WATER SERVICE
MAX.	MAXIMUM	WV	WATER VALVE
MDOT	MAINE DEPARTMENT OF TRANSPORTATION		
MIN.	MINIMUM		
MON	MONUMENT		



OVERALL & INDEX SITE PLAN
SCALE: 1"=80'

80' 0 80' 160'
BAR SCALE
1/2" = 80'
CHECK GRAPHIC SCALE BEFORE USING

IDEALS
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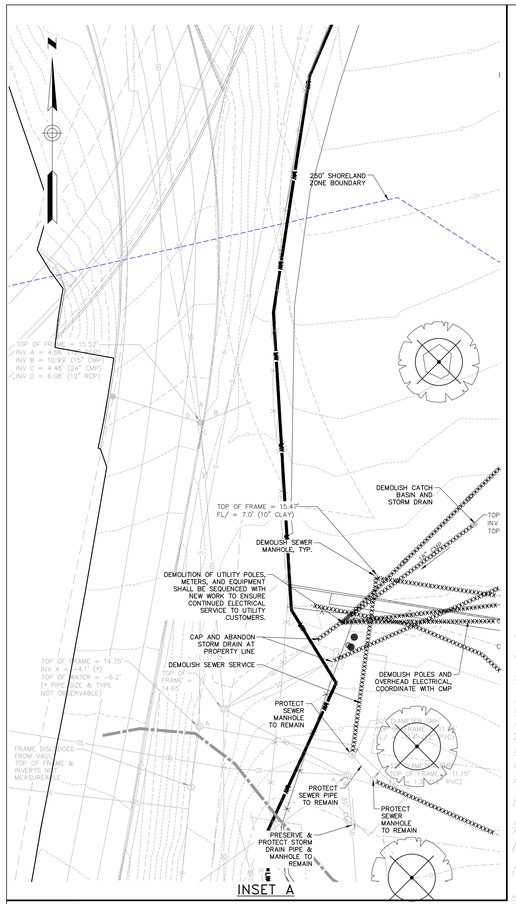
Drawing Title
GENERAL NOTES, LEGEND & ABBREVIATIONS

G-001



DEMOLITION NOTES:

1. SEQUENCE OF WORK WILL FOLLOW THE CONSTRUCTION MANAGEMENT PLAN. DEMOLITION ACTIVITIES SHALL BE SEQUENCED TO ENSURE AREAS OF THE SITE SHALL REMAIN OPERATIONAL DURING CONSTRUCTION.
2. 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.
3. THE WORD "DEMOLISH" SHALL IMPLY THE FULL REMOVAL AND PROPER DISPOSAL OF THE ITEM AND ANY APPURTENANT ITEMS, AS NOTED, OR AS DIRECTED BY THE OWNER OR THEIR REPRESENTATIVE. THE OWNER RETAINS THE RIGHT TO KEEP ANY ITEM NOTED FOR REMOVAL OR DEMOLITION AT THE REQUEST OF THE OWNER OR THEIR REPRESENTATIVE.
4. 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 MADE AVAILABLE TO THE SITE/CIVIL ENGINEER AND THE CITY OF PORTLAND UPON REQUEST.
5. 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 ENGINEER IN WRITING OF THE CONFLICT. FOR ANY UTILITY PIPES OF STRUCTURES FOUND THAT ARE NOT ON THE EXISTING PLAN OR ARE IN LOCATIONS THAT VARY FROM WHAT IS SHOWN, CONTRACTOR SHALL PROVIDE RECORD LOCATIONS.
6. LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THE DRAWINGS ARE APPROXIMATE, AND NOT ALL UTILITY PIPING IS SHOWN. CONTRACTOR SHALL WORK WITH OWNER AND ENGINEER PRIOR TO STARTING ANY EXCAVATION TO DEVELOP AN INVESTIGATION PLAN TO DETERMINE LOCATIONS OF EXISTING FUEL LINES, DOMESTIC AND FIRE WATER LINES, ELECTRICAL DUCT BANKS, SITE SEWER LINES, AND THE PORTLAND WATER DISTRICT SANITARY SEWER FORCEMAIN IN THE VICINITY OF THE WORK AREA.
7. 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, THE CITY OF PORTLAND AND APPLICABLE UTILITY.
8. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE A MAINTENANCE AND PROTECTION OF TRAFFIC (MPT) PLAN IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REQUIREMENTS.
9. 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.
10. ALL SITE FEATURES OUTSIDE LIMIT OF WORK AND NOT DESIGNATED FOR DEMOLITION SHALL BE PROTECTED.
11. WORK SHALL REMAIN WITHIN THE DEFINED LIMITS OF WORK. DEMOLITION WORK WILL NOT IMPACT PRIOR PHASES OF WORK ON THE SITE UNLESS OTHERWISE NOTED ON THESE PLANS.
12. CONTRACTOR SHALL REPAIR OR REPLACE ANY STRUCTURES OR UTILITIES DAMAGED DURING DEMOLITION WORK. THE CONTRACTOR SHALL PROCEED WITH CAUTION WITHIN THE PROPOSED WORK AREA TO PREVENT ANY INTERRUPTION TO EXISTING UTILITY SERVICE UNLESS OTHERWISE COORDINATED WITH THE OWNER.
13. CONTRACTOR SHALL REMOVE AND REUSE EXISTING FENCING ON THE SITE AS IS POSSIBLE. PRIOR TO START OF WORK, CONTRACTOR SHALL REVIEW ALL FENCING WITH OWNER AND ENGINEER TO CONFIRM DEMOLITION OR REUSE. SEE EXHIBIT INCLUDED IN THE SPECIFICATIONS FOR FURTHER INFORMATION ON THE EXISTING FENCING.
14. FOR ALL ELECTRICAL DEMOLITION IDENTIFIED ON THESE PLANS, THE CONTRACTOR SHALL ALSO REVIEW WITH THE PROJECT ELECTRICAL DRAWINGS, AND COORDINATE WITH CENTRAL MAINE POWER AS REQUIRED.
15. TREES WITHIN THE LIMITS OF WORK THAT ARE NOT DESIGNATED AS BEING PROTECTED SHALL BE DEMOLISHED. CONTRACTOR SHALL COMPLY WITH SECTION 4.3 AND CHAPTER 4 FIGURE IV OF THE CITY OF PORTLAND TECHNICAL MANUAL FOR LANDSCAPE PRESERVATION.
16. ALL PERIMETER AND SECURITY FENCING ON THE PROJECT PARCEL SHALL BE DEMOLISHED UNLESS OTHERWISE INDICATED. CONTRACTOR SHALL VERIFY PROPERTY LIMITS PRIOR TO FENCE DEMOLITION.
17. DEMOLITION OF UTILITY POLES, METERS, AND EQUIPMENT SHALL BE SEQUENCED WITH NEW WORK TO ENSURE CONTINUED ELECTRICAL SERVICE TO UTILITY CUSTOMERS.
18. DEMOLISH ALL PAVEMENT, CURB, SIDEWALK AND GUARDRAIL WITHIN THE LIMIT OF WORK UNLESS OTHERWISE INDICATED.

SHEET LEGEND

- XXXXXXXXXXXXXXXXX · UTILITY LINE DEMOLITION
- CATCH BASIN INLET PROTECTION
- SEDIMENT BARRIER
- STRUCTURE DEMOLITION
- TREE DEMOLITION

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

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Drawing Title
DEMOLITION PLAN - 1

C-001

MATCHLINE SEE SHEET C-001

MATCHLINE SEE SHEET C-001

DEMOLITION OF OVERHEAD SERVICE WITH TRANSFORMERS SHALL BE SEQUENCED WITH NEW WORK TO ENSURE CONTINUED SERVICE TO CUSTOMERS

DEMOLISH HYDRANT

LIMITS OF PREVIOUSLY DEMOLISHED BUILDING; REMNANT FOUNDATION MAY REMAIN

SALVAGE RAILS

DEMOLISH HYDRANT

DEMOLISH CONCRETE PAD

TOP OF FRAME = 17.82'
COVER NOT REMOVABLE AT TIME OF SURVEY

APPROXIMATE LOCATION OF ELECTRICAL POLE TO BE DEMOLISHED

TOP OF FRAME = 14.93'
TOP OF PIPE = 11.3' (6" CAST?)
TOP OF SILT = 10.9'±
OTHER FEATURES NOT VISIBLE

TOP OF FRAME = 15.00'
COVER NOT REMOVABLE AT TIME OF SURVEY

DEMOLISH HYDRANT

DEMOLISH WATER SERVICE

APPROXIMATE LOCATION OF UTILITY METER TO BE DEMOLISHED

DEMOLISH FLAG POLE & ASSOCIATED LIGHT FIXTURES & CONDUIT

APPROXIMATE LOCATION OF ELECTRICAL POLE TO BE DEMOLISHED

TOP OF FRAME = 17.60'
FULL OF WATER
FEATURES NOT VISIBLE

APPROXIMATE LOCATION OF OVERHEAD TELECOM UTILITIES TO BE DEMOLISHED

DEMOLISH SIGN

DEMOLISH GAS SERVICE

DEMOLISH HYDRANT

DEMOLISH TREE, TYP.

DEMOLISH CONCRETE PAD

250' SHORELAND ZONE BOUNDARY

MATCHLINE SEE INSET A

DEMOLISH CONCRETE WALL

DEMOLISH TREE, TYP.

DEMOLISH STAIR

DEMOLISH STACK FOUNDATION

FORMER BRICK STACK

DEMOLISH CONCRETE PAD

DEMOLISH CHAINLINK FENCE

DEMOLISH RETAINING WALL

PRESERVE & PROTECT BUILDING TO REMAIN

DEMOLISH TRANSFORMER

10" PVC
INV. = 0.8'
CONNECTION COULD NOT BE DETERMINED AT THE TIME OF SURVEY

12" PVC
INV = 1.5'

TOP OF FRAME = 8.84'
INV A = 3.3' (12" PVC)
INV B = 5.0' (12" PVC)
INV C = 2.8 (12" PVC)

HISTORIC LANDMARK DESIGNATION BOUNDARY

TOP OF FRAME = 8.71'
FL/ = 3.2' (12" PVC)

TOP OF FRAME = 9.3'
INV A = 4.4' (12" PVC)
INV B = 4.8' (6" PVC)
INV C = 4.7 (8" PVC)
INV D = 4.8' (6" PVC)

TOP OF FRAME = 9.30'
FL/ = 5.7' (6" PVC)

LIMITS OF PREVIOUSLY DEMOLISHED BUILDING; REMNANT FOUNDATION MAY REMAIN

TOP OF FRAME = 9.55'
INV A = 6.4' (6" PVC)
INV B = 6.4' (6" PVC)
SUMP = 3.4'

TOP OF FRAME = 9.9'
INV A = 4.1' (10" PVC)
INV B = 4.1' (10" PVC)
INV C = 3.5' (12" PVC)

TOP OF FRAME = 9.12'
INV = 5.7'
(12" PVC)

TOP OF FRAME = 10.34'
INACCESSIBLE AT TIME OF SURVEY

APPROXIMATE FEMA FLOOD ZONE LINE

PERIMETER BARRIER, TYP.

TOP OF FRAME = 8.25'
INV A = 3.2' (6" PVC)
INV B = 3.4' (12" PVC)
INV C = 3.0' (6" PVC)

DEMOLISH BUILDING FOUNDATION

MATCHLINE SEE INSET B

DEMOLISH BUILDING FOUNDATION

DEMOLISH BUILDING & PIER

INSET B

NOTES:
1. REFER TO SHEET C-001 FOR GENERAL DEMOLITION NOTES AND DEMOLITION LEGEND.

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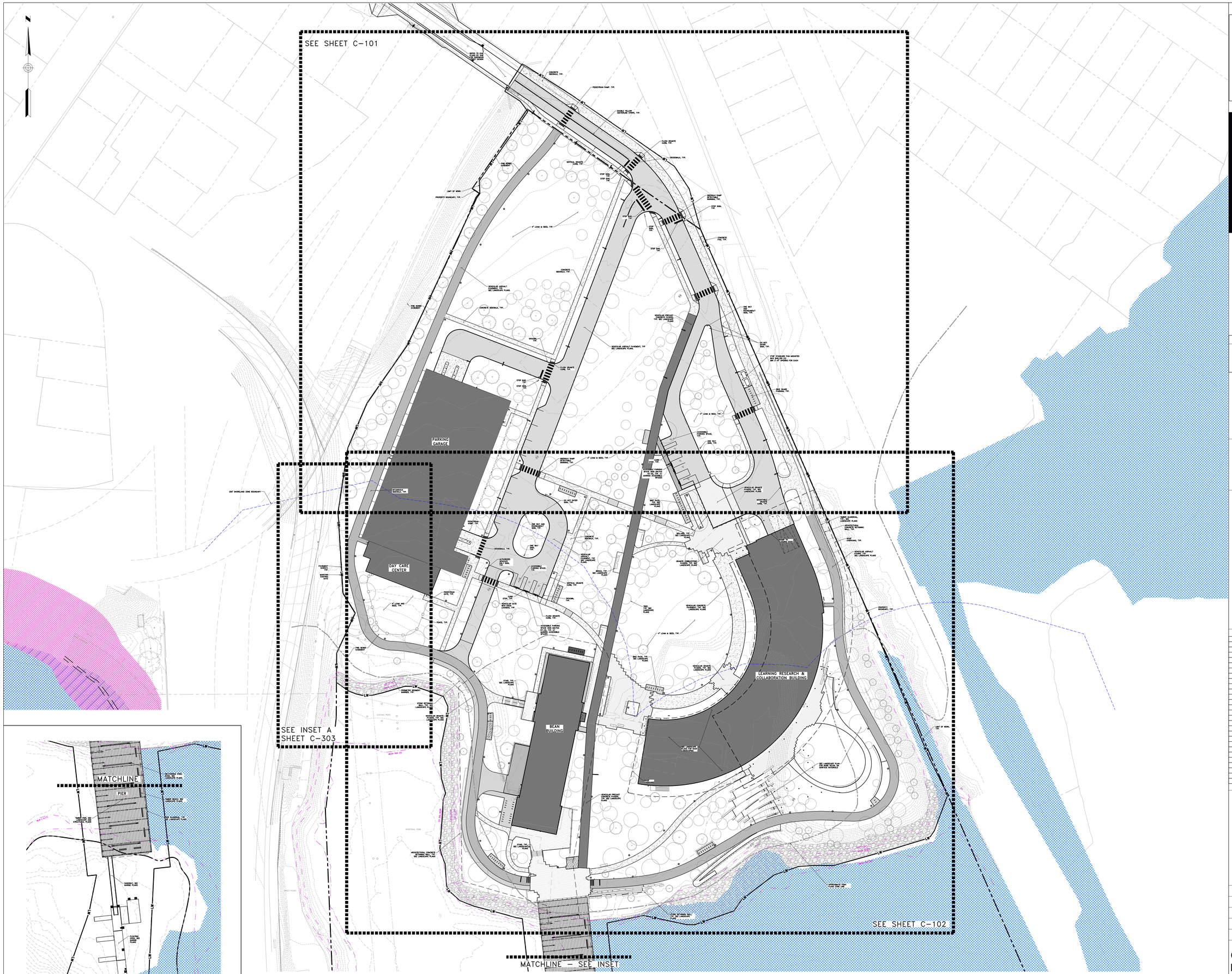
Drawing Title

DEMOLITION PLAN - 2

C-002



NOTES:
1. REFER TO SHEET C-101 FOR GENERAL SITE LAYOUT PLAN NOTES.
2. REFER TO SHEET C-304 FOR LINE AND CURVE LAYOUT DATA.
3. REFER TO SHEET C-101 AND C-102 FOR DIMENSIONS.

40' 0 40' 80'
BAR SCALE
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Scale	1"=40'

Drawing Title
OVERALL SITE LAYOUT PLAN

C-100

NOTES:
1. SEE LANDSCAPE PLANS FOR SITE SURFACE MATERIAL ASSOCIATED WITH LANDSCAPED AREAS, PATIOS, AND NON-BITUMINOUS WALKWAYS & ROADWAYS, PLANTING PLANS AND SITE FURNISHINGS.
2. UTILITY AND DRAINAGE STRUCTURES NOT SHOWN FOR CLARITY, SEE GRADING AND DRAINAGE AND UTILITY PLAN FOR MORE INFORMATION.
3. REFER TO SHEET C-304 FOR LINE AND CURVE LAYOUT DATA.

REFER TO CIVIL PLANS BY VHB FOR SHERWOOD STREET DESIGN
CONCRETE SIDEWALK, TYP.
PEDESTRIAN RAMP, TYP.
DOUBLE YELLOW CENTERLINE STRIPE, TYP.
FLUSH GRANITE CURB, TYP.
CROSSWALK, TYP.
VERTICAL GRANITE CURB, TYP.
PWD SEWER EASEMENT
STOP SIGN, TYP.
STOP BAR, TYP.
LIMIT OF WORK
PROPERTY BOUNDARY, TYP.
4" LOAM & SEED, TYP.
SIDEWALK RAMP DETECTABLE WARNING, TYP.
STOP SIGN, TYP.
STOP BAR, TYP.
CONCRETE PAD, TYP.
VEHICULAR ASPHALT PAVEMENT, TYP SEE LANDSCAPE PLANS.
PWD SEWER EASEMENT
CONCRETE SIDEWALK, TYP.
TIPDOWN, TYP.
FLUSH GRANITE CURB, TYP.
STOP BAR, TYP.
STOP SIGN, TYP.
VEHICULAR ASPHALT PAVEMENT, TYP SEE LANDSCAPE PLANS.
ONE WAY AND ROUNDABOUT SIGN, TYP.
TREE, TYP. SEE LANDSCAPE PLANS
DO NOT ENTER SIGN, TYP.
VEHICULAR PRECAST CONCRETE PAVERS, TYP. SEE LANDSCAPE PLANS
5'X8' STANDARD PAD-MOUNTED BUS SHELTER (2) MIN 2'-8" OPENING FOR EACH
CITY BIKE SHARE RACK, TYP., SEE LANDSCAPE PLANS
TIMBER GUARDRAIL, TYP. SEE LANDSCAPE PLANS
4" LOAM & SEED, TYP.
ARCHITECTURAL CONCRETE RETAINING WALL, SEE STRUCTURAL PLANS
CONCRETE SIDEWALK, TYP
ACCESSIBLE PARKING SPACE, TYP.
ONE WAY SIGN, TYP.
4" LOAM & SEED, TYP.
CURB STOP, TYP.
ACCESSIBLE PARKING SPACE SIGN (MUTCD R7-8), TYP. AT MARKED ACCESSIBLE SPACES
CURB BREAK, TYP.
4" TIPDOWN, TYP.
MOUNTABLE GRANITE CURB, TYP.
BIKE RACK, TYP. SEE LANDSCAPE PLANS
PARKING GARAGE
GARAGE FACADE WALL, TYP.
250' SHORELAND ZONE BOUNDARY
MATCHLINE SEE SHEET C-102
MATCHLINE SEE SHEET C-102
MATCHLINE SEE INSET A, SHT. C-303

BAR SCALE
1" = 20'
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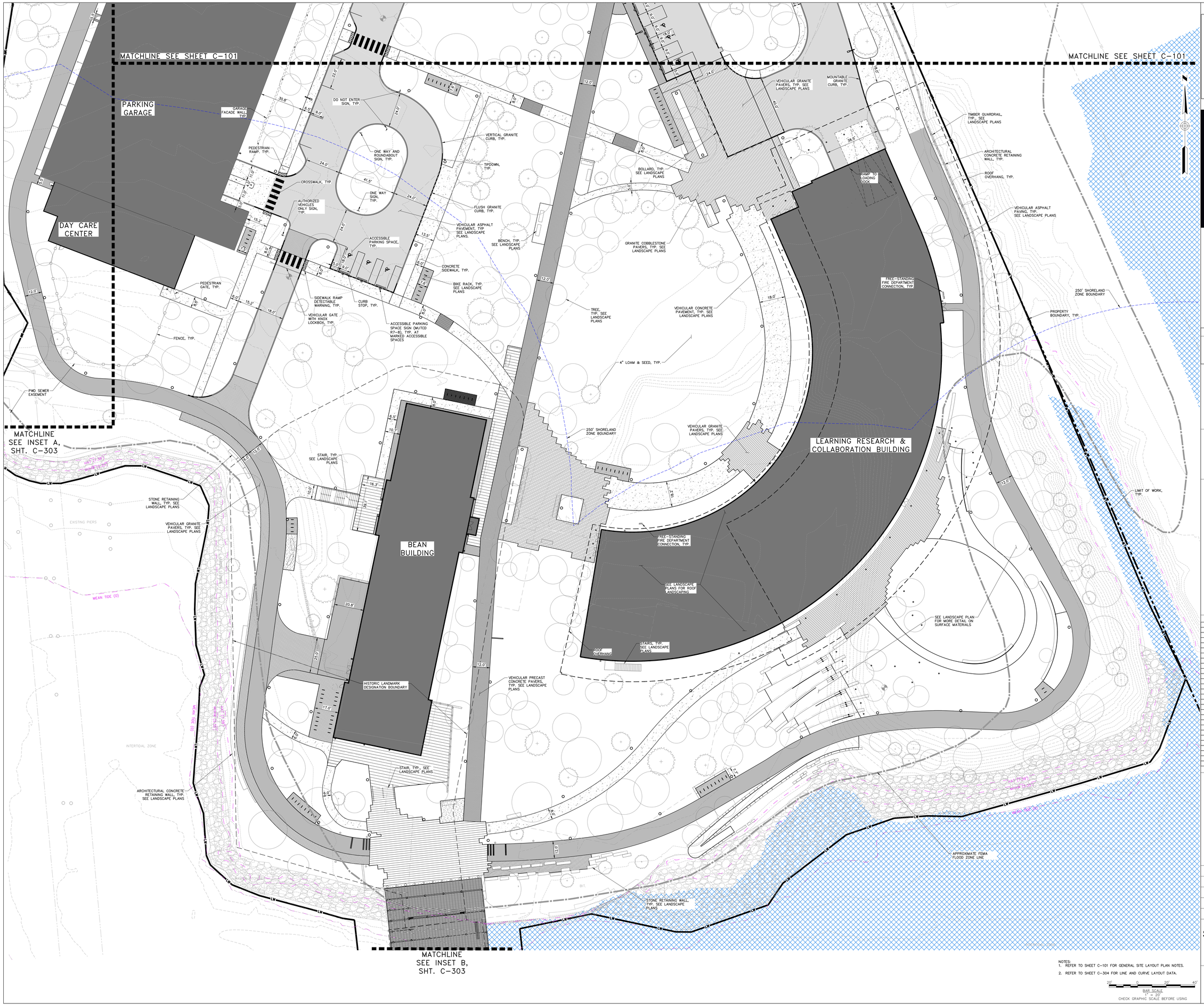
Drawing Title
SITE LAYOUT PLAN - 1

C-101



NOTES:
1. REFER TO SHEET C-101 FOR GENERAL SITE LAYOUT PLAN NOTES.
2. REFER TO SHEET C-304 FOR LINE AND CURVE LAYOUT DATA.

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Drawing Title
SITE LAYOUT PLAN - 2

C-102

REFER TO CIVIL PLANS BY VHB FOR SHERWOOD STREET DESIGN

12" INSERTION VALVE, TYP. FINAL LOCATION TO BE DETERMINED BY TEST PIT, COORDINATE WORK WITH PWD

OVERHEAD ELECTRICAL, TYP., SEE ELECTRICAL PLANS

UTILITY POLE, TYP. SEE ELECTRICAL PLANS

PROVIDE NEW HYDRANT ASSEMBLY FROM EXISTING GATE VALVE, COORDINATE WORK WITH PWD

RAISE EXISTING MANHOLE FRAME AND COVER TO GRADE

APPROXIMATE LOCATION OF STORM DRAIN FROM SURVEY

APPROXIMATE LOCATION OF STORM DRAIN FROM CITY SHERWOOD STREET RECORD DRAWINGS; TEST PITS TO BE CONDUCTED TO LOCATE STORM DRAIN AND WATER MAIN IN SHERWOOD STREET PRIOR TO CONSTRUCTION

CONNECT TO EXISTING WATER MAIN WITH 12" SOLID SLEEVE, COORDINATE WITH PWD

12" GATE VALVE WITH FOSTER ADAPTOR

PWD SEWER EASEMENT

ELECTRIC VAULT, TYP., SEE ELECTRICAL PLANS

UNDERGROUND ELECTRICAL, TYP., SEE ELECTRICAL PLANS

CONNECT TO EXISTING WATER MAIN WITH 12" SOLID SLEEVE, COORDINATE WITH PWD

12" GATE VALVE & BOX

12"X12" DI TEE WITH PLUGGED

THRUST BLOCK, TYP.

6'X8' WATER METER PIT

PAD-MOUNTED RPZ WITH ENCLOSURE

12" GATE VALVE & BOX

LIGHT POLE, TYP., SEE ELECTRICAL PLANS

SECURITY CAMERA AND BLUE LIGHT INTERCOM, TYP.

PWD SEWER EASEMENT

SECURITY CAMERA, TYP.

PRIVATE HYDRANT ASSEMBLY, TYP.

PARKING GARAGE

MATCHLINE SEE INSET A, SHT. C-303

250' SHORELAND ZONE BOUNDARY

MATCHLINE SEE SHEET C-202

MATCHLINE SEE SHEET C-202

INTERSTATE 295 SOUTH

INTERSTATE 295 NORTH

SHERWOOD STREET

RAILROAD

BAR SCALE
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Drawing Title

SITE UTILITY PLAN - 1

C-201

MATCHLINE SEE SHEET C-201

MATCHLINE SEE SHEET C-201

PARKING GARAGE

DAY CARE CENTER

6" FIRE PROTECTION SERVICE
2" DOMESTIC WATER SERVICE
4" SANITARY INV OUT =16.00
6" SANITARY FLOOR DRAINS INV OUT =16.00
OIL/WATER SEP VENT TO ROOF
6" FIRE PROTECTION SERVICE
2" DOMESTIC WATER SERVICE
6" SANITARY INV OUT=9.33

CAP FOR FUTURE CONNECTION 12" PVC INV=10.11
END CAP
OW SEP S10
BELOW-GRADE STORMWATER TREATMENT
SECURITY CAMERA, TYP.
ELECTRIC HAND HOLE, TYP., SEE ELECTRICAL PLANS
ELECTRIC VAULT, TYP., SEE ELECTRICAL PLANS
FIRE DEPARTMENT HOSE BIB CONNECTION, TYP.
FREE-STANDING FIRE DEPARTMENT CONNECTIONS, TYP.
250' SHORELAND ZONE BOUNDARY
6" DOMESTIC WATER SERVICE
8" FIRE PROTECTION SERVICE
8" FIRE PROTECTION SERVICE
END CAP
8" SANITARY INV OUT=14.03
SURFACE STORMWATER TREATMENT SYSTEM
LEARNING RESEARCH & COLLABORATION BUILDING
ADJUST STRUCTURE FRAME & COVER TO GRADE, COORDINATE WITH PWD
SECURITY CAMERA AND BLUE LIGHT INTERCOM, TYP.
BELOW-GRADE STORMWATER TREATMENT
MATCH EXISTING INVERT, CONNECT NEW PIPE TO EXISTING STRUCTURE 12" PVC INV IN= 1.3 PROVIDE BACKFLOW PREVENTER
PWD SEWER EASEMENT
MATCHLINE SEE INSET A, SHT C-303
UNDERGROUND ELECTRICAL, TYP., SEE ELECTRICAL PLANS
4" DOMESTIC WATER SERVICE
6" FIRE PROTECTION SERVICE
6" SANITARY INV OUT=5.70
8" SANITARY INV OUT=13.66 (2)
FREE-STANDING FIRE DEPARTMENT CONNECTIONS, TYP.
FIRE DEPARTMENT HOSE BIB CONNECTION, TYP.
BEAN BUILDING
HISTORIC LANDMARK DESIGNATION BOUNDARY
PRIVATE HYDRANT ASSEMBLY, TYP.
2" BLOW-OFF VALVE AND THRUST BLOCK
APPROXIMATE FEMA FLOOD ZONE LINE
EXISTING PIERS
MEAN TIDE (0)
INTERTIDAL ZONE
MATCHLINE SEE INSET B, SHT. C-303

NOTE:
1. REFER TO SHEET C-304 FOR SANITARY SEWER PIPE AND STRUCTURE TABLES.

BAR SCALE
1" = 20'
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Drawing Title
SITE UTILITY PLAN - 2

C-202

NOTE:
1. REFER TO SHEET C-304 FOR DRAINAGE PIPE AND STRUCTURE TABLES.

REFER TO CIVIL PLANS BY VHB FOR SHERWOOD STREET DESIGN

MATCH EXISTING SD INVERTS

APPROXIMATE LOCATION OF STORM DRAIN FROM SURVEY

APPROXIMATE LOCATION OF STORM DRAIN FROM CITY SHERWOOD STREET RECORD DRAWINGS; TEST PITS TO BE CONDUCTED TO LOCATE STORM DRAIN AND WATER MAIN IN SHERWOOD STREET PRIOR TO CONSTRUCTION

PWD SEWER EASEMENT

MATCH EXISTING SD INVERTS

STABILIZED CONSTRUCTION ENTRANCE, TYP.

PWD SEWER EASEMENT

MATCHLINE SEE INSET A, SHT. C-303

PARKING GARAGE

MATCHLINE SEE SHEET C-302

250' SHORELAND ZONE BOUNDARY

MATCHLINE SEE SHEET C-302

TURF REINFORCEMENT MATTING, TYP.

CURB BREAK, TYP.

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GRADING & DRAINAGE PLAN - 1

C-301

MATCHLINE SEE SHEET C-301

MATCHLINE SEE SHEET C-301

PARKING GARAGE

DAY CARE CENTER FTE=16.00

12" ROOF DRAIN INV OUT= 16.00

6" ROOF DRAIN INV OUT=15.00

SUBSURFACE SAND FILTER 1

SUBSURFACE SAND FILTER 2

12" INV IN = 13.15

12" INV OUT = 9.15

12" INV IN = 12.15

18" INV OUT = 11.65

12" INV OUT = 11.00

12" INV IN = 16.85

12" INV OUT = 12.85

12" INV IN = 14.00

12" INV OUT = 10.00

12" INV IN = 13.80

12" INV OUT = 9.80

12" HDPE INV = 7.40

8" ROOF DRAIN INV OUT= 16.00

8" ROOF DRAIN INV. OUT= 15.00

12" ROOF DRAIN INV OUT=17.83

12" ROOF DRAIN INV OUT=17.17

10" ROOF DRAIN INV OUT=15.00

4" FOUNDATION DRAIN CONNECTION

4" FOUNDATION DRAIN CONNECTION

BIORETENTION BASIN 1

BIORETENTION BASIN 2

OVERFLOW SPILLWAY ELEV. = 14.80

OVERFLOW SPILLWAY ELEV. = 13.80

TURF REINFORCEMENT MATTING, TYP.

TURF REINFORCEMENT MATTING, TYP.

TRENCHDRAIN SEE LANDSCAPE PLANS

TRENCHDRAIN SEE LANDSCAPE PLANS

BEAN BUILDING

LEARNING RESEARCH & COLLABORATION BUILDING

250' SHORELAND ZONE BOUNDARY

SEE LANDSCAPE PLAN FOR MORE DETAIL ON SURFACE CONDITIONS

SEE LANDSCAPE PLAN FOR MORE DETAIL ON SURFACE CONDITIONS

SEE LANDSCAPE PLAN FOR DETAILS OF COASTAL IMPROVEMENTS

APPROXIMATE FEMA FLOOD ZONE LINE

MATCHLINE SEE INSET A, SHT. C-303

MATCHLINE SEE INSET B, SHT. C-303

PWD SEWER EASEMENT

EXISTING PIERS

MEAN TIDE (0)

INTERTIDAL ZONE

OUTFALL 1 WITH INLINE BACKFLOW PREVENTION VALVE (TIDEFLEX OR EQUAL) 30" HDPE INV OUT=8.40

OUTFALL 2 WITH INLINE BACKFLOW PREVENTION VALVE (TIDEFLEX OR EQUAL) 24" HDPE INV OUT=5.80

OUTFALL 3 WITH INLINE BACKFLOW PREVENTION VALVE (TIDEFLEX OR EQUAL) 24" HDPE INV OUT=8.40

RIPRAP SLOPE STABILIZATION, TYP. SEE LANDSCAPE PLANS

SEDIMENT BARRIER, TYP.

NOTE:
1. REFER TO SHEET C-304 FOR DRAINAGE PIPE AND STRUCTURE TABLES.

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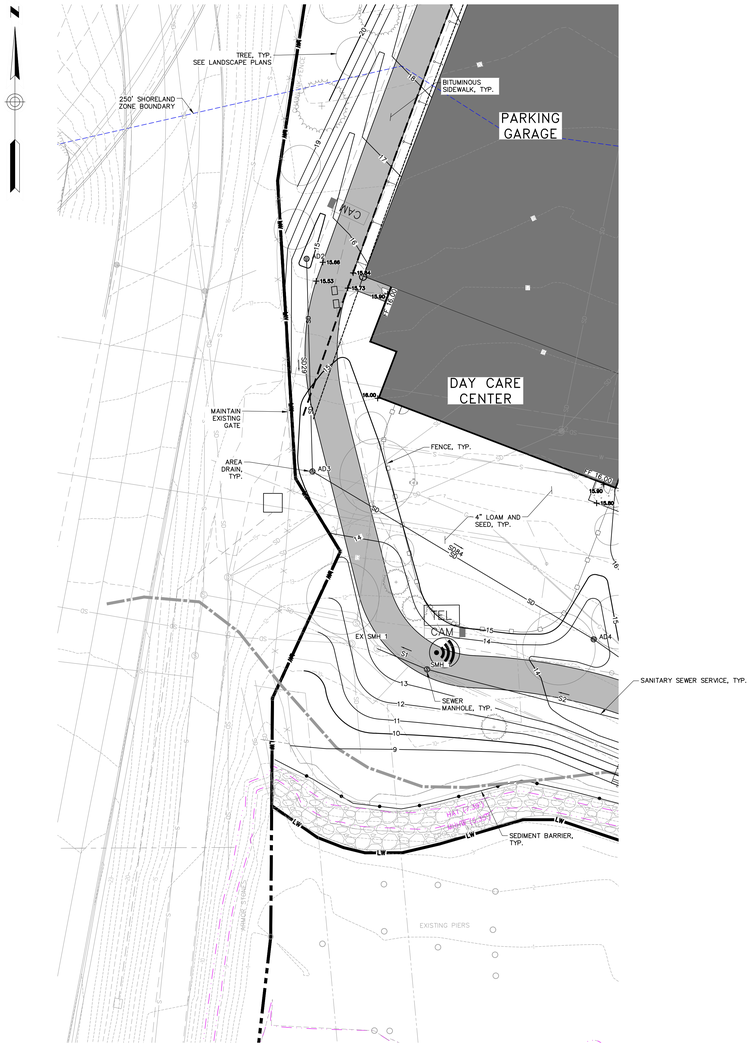
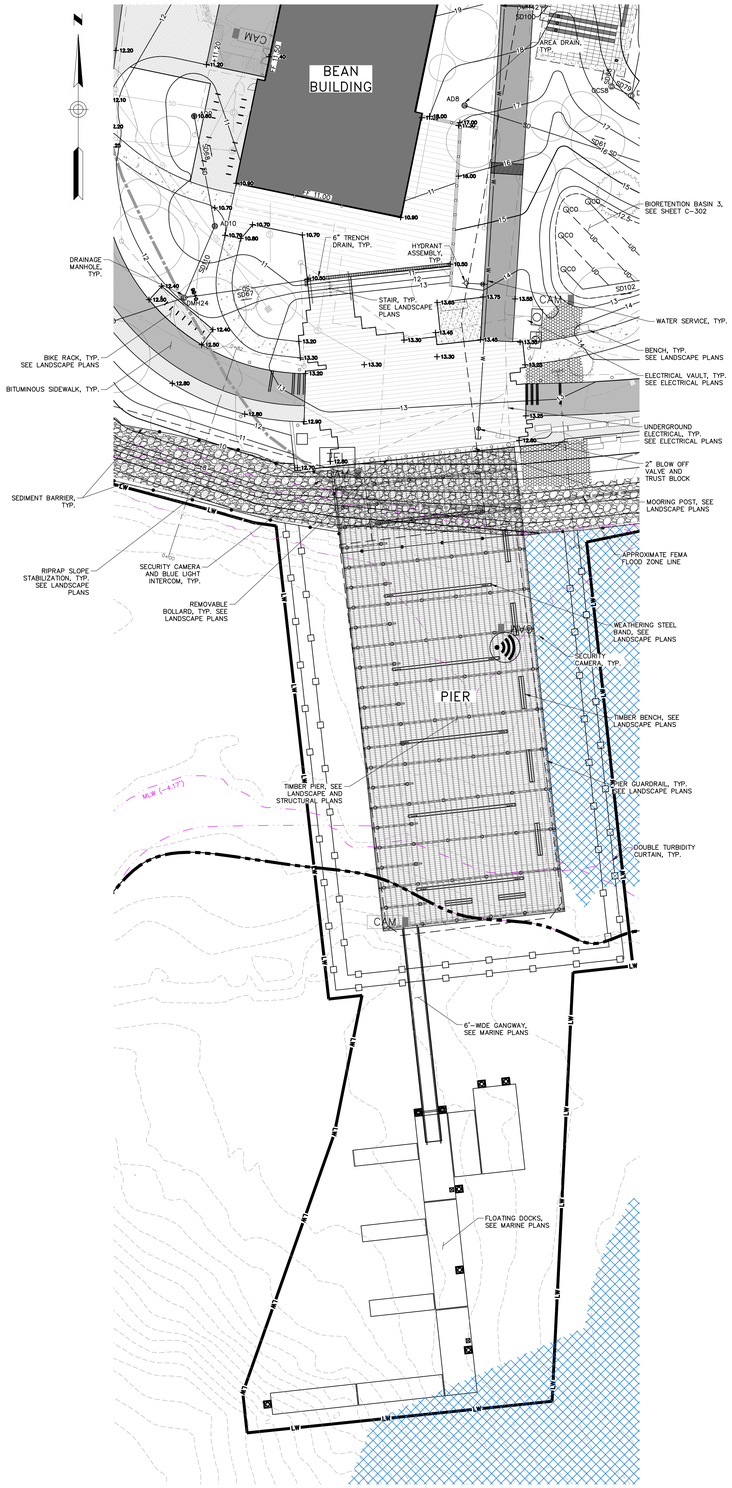
Drawing Title

GRADING & DRAINAGE PLAN - 2

C-302



INSET A



INSET B

NOTE:
1. REFER TO SHEET C-304 FOR SANITARY SEWER AND STORMWATER DRAINAGE STRUCTURE AND PIPE TABLES.

20' 0 20' 40'
BAR SCALE
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Checked	DLC
Date	27 MARCH 2024
Scale	1"=20'

Drawing Title
PLAN INSETS

C-303

LAYOUT DATA – SHEET C–101 & C–102

LINE LAYOUT DATA						
Line #	Length	Direction	START NORTHING	START EASTING	END NORTHING	END EASTING
L1	174.77	S55° 17' 24.15"E	308812.37	2929385.74	308712.85	308712.85
L2	218.20	N20° 56' 49.09"E	308443.91	2929460.25	308647.68	308647.68
L3	124.33	S69° 03' 10.91"E	308479.71	2929324.76	308435.26	308435.26
L4	47.49	N20° 56' 49.07"E	308423.83	2929281.96	308468.18	308468.18
L5	28.49	S20° 56' 49.07"W	308435.78	2929330.43	308409.17	308409.17
L6	88.33	N69° 03' 10.91"W	308412.85	2929432.30	308444.43	308444.43
L7	8.59	N65° 56' 49.09"E	308373.65	2929425.29	308377.15	308377.15
L8	61.88	N20° 56' 49.09"E	308313.09	2929400.54	308370.87	308370.87
L9	8.58	N24° 04' 28.89"W	308301.43	2929404.14	308309.26	308309.26
L10	10.68	N20° 56' 49.09"E	308287.62	2929400.43	308297.60	308297.60
L11	8.59	N65° 56' 49.09"E	308281.35	2929389.95	308284.85	308284.85
L12	61.86	N20° 56' 49.09"E	308220.80	2929365.21	308278.57	308278.57
L13	8.59	N24° 03' 10.91"W	308209.13	2929368.81	308216.97	308216.97
L14	31.33	S69° 03' 10.93"E	308207.86	2929320.28	308196.66	308196.66
L15	47.13	N69° 03' 10.93"W	308166.73	2929355.00	308183.58	308183.58
L16	102.18	N21° 00' 43.67"E	308057.39	2929318.37	308152.77	308152.77
L17	106.15	N21° 00' 43.67"E	308046.92	2929333.63	308146.01	308146.01
L18	3.67	S69° 05' 23.22"E	308151.77	2929384.60	308150.45	308150.45
L19	13.01	S20° 57' 09.82"W	308144.00	2929390.91	308131.84	308131.84
L20	47.00	N69° 02' 34.45"W	308115.03	2929430.15	308131.85	308131.85
L21	87.95	N20° 57' 09.82"E	308114.57	2929429.97	308196.70	308196.70
L22	6.47	N69° 03' 10.91"W	308253.53	2929436.06	308255.84	308255.84
L23	1.47	N69° 03' 10.91"W	308231.12	2929427.48	308231.64	308231.64
L24	25.43	S20° 56' 49.09"W	308220.11	2929400.28	308196.36	308196.36
L25	1.47	S69° 05' 23.22"E	308170.53	2929402.73	308170.01	308170.01
L26	25.43	N20° 57' 09.82"E	308181.54	2929429.92	308205.29	308205.29
L27	379.58	N20° 56' 49.09"E	308275.22	2929421.37	308629.71	308629.71
L28	117.51	S23° 38' 40.60"E	308630.63	2929595.93	308522.98	308522.98
L29	113.66	S20° 56' 49.09"W	308504.01	2929643.50	308397.86	308397.86
L30	32.29	S12° 15' 38.07"W	308397.86	2929602.87	308366.31	308366.31
L31	27.12	S23° 38' 40.60"E	308366.31	2929596.01	308341.47	308341.47
L32	13.00	S66° 21' 19.40"W	308334.88	2929604.31	308329.67	308329.67
L33	73.00	S23° 38' 40.60"E	308329.67	2929592.40	308262.79	308262.79
L34	18.03	N66° 21' 19.40"E	308262.79	2929621.68	308270.02	308270.02
L35	65.46	S23° 34' 05.14"E	308270.02	2929638.19	308210.02	308210.02
L36	44.67	S66° 26' 01.46"W	308227.88	2929705.31	308210.02	308210.02
L37	19.14	N23° 14' 49.30"W	308199.86	2929739.24	308217.45	308217.45
L38	20.33	N23° 14' 49.30"W	308215.42	2929774.45	308234.10	308234.10
L39	20.77	N14° 52' 37.73"W	308261.69	2929756.90	308281.77	308281.77
L40	85.59	N23° 38' 38.32"W	308353.92	2929726.35	308432.32	308432.32
L41	129.79	N23° 38' 38.50"W	308524.97	2929668.38	308643.86	308643.86
L42	174.77	S55° 17' 24.15"E	308832.10	2929399.41	308732.58	308732.58
L43	85.25	S20° 56' 49.09"W	308484.44	2929651.53	308404.82	308404.82
L44	75.22	S23° 38' 40.60"E	308354.50	2929627.38	308285.59	308285.59
L45	4.03	S23° 38' 40.60"E	308282.85	2929658.75	308279.16	308279.16
L46	9.89	N66° 26' 01.46"E	308266.27	2929693.26	308270.22	308270.22
L47	72.15	N23° 38' 38.32"W	308344.30	2929704.37	308410.39	308410.39
L48	47.89	N8° 20' 11.80"W	308435.99	2929668.09	308483.37	308483.37

CURVE LAYOUT DATA									
Curve #	Length	Radius	Delta	Chord Direction	Chord Length	START NORTHING	START EASTING	END NORTHING	END EASTING
C1	20.75	188.00	6.32	S52° 07' 44"W	20.73	308712.85	2929529.41	308700.12	2929545.78
C2	38.75	25.00	88.82	S4° 33' 31"W	34.99	308700.12	2929545.78	308665.25	2929548.56
C3	20.46	62.00	18.90	N30° 23' 55"W	20.36	308647.68	2929538.26	308665.25	2929548.56
C4	23.56	15.00	90.00	N65° 56' 49"E	21.21	308435.26	2929440.88	308443.91	2929460.25
C5	31.42	20.00	90.00	N65° 56' 49"E	28.28	308468.18	2929298.94	308479.71	2929324.76
C6	23.56	15.00	90.00	S65° 56' 49"W	21.21	308444.43	2929349.81	308435.78	2929330.43
C7	23.56	15.00	90.00	N24° 03' 10"W	21.21	308393.48	2929440.95	308412.85	2929432.30
C8	3.93	5.00	45.00	N43° 26' 50"E	3.83	308377.15	2929433.13	308379.93	2929435.76
C9	3.93	5.00	45.00	N43° 26' 49"E	3.83	308370.87	2929422.66	308373.65	2929425.29
C10	3.93	5.00	45.02	N1° 33' 50"W	3.83	308309.26	2929400.64	308313.09	2929400.54
C11	3.93	5.00	45.02	N1° 33' 50"W	3.83	308297.60	2929404.24	308301.43	2929404.14
C12	3.93	5.00	45.00	N43° 26' 49"E	3.83	308284.85	2929397.79	308287.62	2929400.43
C13	3.93	5.00	45.00	N43° 26' 49"E	3.83	308278.57	2929387.32	308281.35	2929389.95
C14	3.93	5.00	45.00	N1° 33' 11"W	3.83	308216.97	2929365.31	308220.80	2929365.21
C15	3.93	5.00	45.00	N1° 33' 11"W	3.83	308205.31	2929368.91	308209.13	2929368.81
C16	23.56	15.00	90.00	N65° 56' 49"E	21.21	308196.66	2929349.54	308205.31	2929368.91
C17	7.85	5.00	90.00	N24° 03' 11"W	7.07	308160.28	2929357.88	308166.73	2929355.00
C18	38.73	25.00	88.77	N65° 23' 51"E	34.97	308042.83	2929286.57	308057.39	2929318.37
C19	27.02	25.00	61.93	S9° 57' 15"E	25.73	308038.88	2929330.54	308013.54	2929334.99
C20	15.69	10.00	89.90	N65° 57' 40"E	14.13	308146.01	2929371.69	308151.77	2929384.60
C21	7.86	5.00	90.03	S24° 03' 48"E	7.07	308150.45	2929388.03	308144.00	2929390.91
C22	69.12	44.00	90.01	N24° 03' 01"W	62.23	308196.70	2929461.42	308253.53	2929436.06
C23	23.56	15.00	90.00	N24° 03' 11"W	21.21	308255.84	2929430.02	308275.22	2929421.37
C24	31.42	20.00	90.00	S65° 56' 49"W	28.28	308231.64	2929426.11	308220.11	2929400.28
C25	31.43	20.00	90.04	S24° 04' 17"E	28.29	308196.36	2929391.19	308170.53	2929402.73
C26	31.40	20.00	89.96	N65° 55' 53"E	28.27	308170.01	2929404.10	308181.54	2929429.92
C27	31.42	20.00	90.01	N24° 03' 01"W	28.29	308205.29	2929439.01	308231.12	2929427.48
C28	49.63	21.00	135.41	N88° 39' 04"E	38.86	308629.71	2929557.08	308630.63	2929595.93
C29	19.46	25.00	44.59	S1° 20' 56"E	18.97	308522.98	2929643.06	308504.01	2929643.50
C30	7.85	5.00	90.00	S21° 21' 19"W	7.07	308341.47	2929606.88	308334.88	2929604.31
C31	31.53	20.00	90.32	N68° 24' 24"W	28.36	308217.45	2929731.68	308227.88	2929705.31
C32	29.22	200.00	8.37	N19° 03' 44"W	29.19	308234.10	2929766.43	308261.69	2929756.90
C33	76.51	500.00	8.77	N19° 15' 38"W	76.43	308281.77	2929751.56	308353.92	2929726.35
C34	81.39	250.00	18.65	N14° 19' 01"W	81.03	308432.32	2929692.03	308510.84	2929671.99
C35	14.65	45.00	18.65	N14° 19' 01"W	14.59	308510.84	2929671.99	308524.97	2929668.38
C36	116.51	212.00	31.49	S39° 32' 45"W	115.05	308732.58	2929543.08	308643.86	2929616.33
C37	13.15	5.00	150.72	N83° 41' 41"W	9.68	308483.37	2929661.15	308484.44	2929651.53
C38	38.91	50.00	44.59	S1° 20' 56"E	37.94	308404.82	2929621.06	308366.90	2929621.95
C39	39.24	25.00	89.92	S68° 36' 20"E	35.33	308279.16	2929660.36	308266.27	2929693.26
C40	44.67	30.00	85.31	N23° 46' 36"E	40.66	308270.22	2929702.32	308307.43	2929718.71
C41	39.58	476.00	4.76	N21° 15' 44"W	39.56	308307.43	2929718.71	308344.30	2929704.37
C42	26.72	100.00	15.31	S15° 59' 25"E	26.64	308435.99	2929668.09	308410.39	2929675.43

STRUCTURE & PIPE DATA – SHEET C–201 & C–202

STRUCTURE TABLE				
NAME	DIA.	RIM	INV IN/SIZE/FROM	INV OUT/SIZE/TO
EX SMH 1	4'	13.13	1.30/10"PVC/SMH 1	
OW SEP. 1	4'	20.05	15.48/6"PVC/GARAGE SAN OUTLET	15.38/6"PVC/SMH 4
SMH 1	4'	13.32	1.60/10"PVC/SMH 2	1.50/10"PVC/EX SMH 1
SMH 2	4'	15.00	3.55/8"PVC/SMH 10 3.55/10"PVC/SMH 3	3.45/10"PVC/SMH 1
SMH 3	4'	12.59	8.00/10"PVC/SMH 4 9.06/8"PVC/SMH 8	7.90/10"PVC/SMH 2
SMH 4	4'	19.92	15.29/6"PVC/OW SEP. 1 9.78/10"PVC/STUB 15.36/6"PVC/OW SEP	9.68/10"PVC/SMH 3
SMH 5	4'	21.25	11.02/8"PVC/SMH 6	10.92/8"PVC/SMH 8
SMH 6	4'	22.00	12.18/8"PVC/SMH 7	12.08/8"PVC/SMH 5
SMH 7	4'	36.09	13.18/8"PVC/LRC SAN OUTLET 1 13.18/8"PVC/C02 13.18/8"PVC/SMH 9	13.08/8"PVC/SMH 6
SMH 8	4'	19.10	9.54/8"PVC/SMH 5	9.44/8"PVC/SMH 3
SMH 9	4'	17.50	13.98/8"PVC/C01	13.88/8"PVC/SMH 7
SMH 10	4'	13.90	5.25/6"PVC/BEAN SAN OUTLET	5.15/8"PVC/SMH 2

PIPE TABLE			
PIPE NAME	SIZE	LENGTH	SLOPE
S1	10" PVC	16'	0.0125
S2	10" PVC	99'	0.0187
S3	8" PVC	114'	0.0140
S4	6" PVC	43'	0.0105
S5	10" PVC	82'	0.0530
S6	6" PVC	46'	0.0109
S7	6" PVC	54'	0.0254
S8	10" PVC	64'	0.0262
S9	6" PVC	5'	0.0180
S10	6" PVC	47'	0.0111
S11	10" PVC	20'	0.0165
S12	8" PVC	128'	0.0108
S13	8" PVC	92'	0.0115
S14	8" PVC	89'	0.0101
S15	8" PVC	8'	0.0600
S16	8" PVC	5'	0.0920
S17	6" PVC	6'	0.0033
S18	6" PVC	2'	0.0200
S19	8" PVC	40'	0.0095
S20	8" PVC	60'	0.0117
S21	8" PVC	61'	0.0134
S22	8" PVC	10'	0.0070

STRUCTURE & PIPE DATA – SHEET C–301 & C–302

STRUCTURE TABLE				
NAME	DIA.	RIM	INV IN/SIZE/FROM	INV OUT/SIZE/TO
AD1	4'	20.75	17.25/12"HDPE/CB5	17.15/12"HDPE/DMH6
CB1*	4'	28.01		24.40/12"HDPE/DOG HS MH 1
CB2*	4'	28.00		24.40/12"HDPE/DOG HS MH 1
CB3*	4'	26.29		22.00/12"HDPE/DOG HS MH2
CB4	4'	24.45		20.00/12"HDPE/DMH1
CB5	4'	21.40		17.60/12"HDPE/AD1
CB6	4'	26.25		22.25/12"HDPE/CB7
CB7	4'	24.08	17.61/12"HDPE/CB6	17.51/12"HDPE/DMH2
CB8	4'	21.89		17.50/12"HDPE/DMH5
CB13	4'	23.80		19.90/12"HDPE/DMH3
CB14	4'	23.83		19.12/12"HDPE/DMH25
DMH1	4'	22.71	18.70/12"HDPE/CB4	18.60/12"HDPE/DMH6
DMH2	4'	23.71	17.33/12"HDPE/CB7 18.60/12"HDPE/DMH25	17.23/18"HDPE/DMH5
DMH3	4'	24.12	19.70/12"HDPE/CB13	19.60/12"HDPE/DMH25
DMH4	4'	24.40	19.20/12"HDPE/FI1	19.10/18"HDPE/DMH13
DMH5	4'	21.95	17.35/12"HDPE/CB8 16.60/18"HDPE/DMH2	16.50/18"HDPE/DMH26
DMH25	4'	23.99	19.00/12"HDPE/DMH3 18.90/12"HDPE/CB14	18.80/12"HDPE/DMH2
DOG HS MH 1*	4'	28.18	24.30/12"HDPE/CB1 24.30/12"HDPE/CB2	
DOG HS MH2*	4'	25.68	21.79/12"HDPE/CB3	
FI1	2'	23.50		19.65/12"HDPE/DMH4

*TEST PITS TO BE CONDUCTED ON SHERWOOD STREET TO CONFIRM LOCATION AND INVERTS OF EXISTING STORM DRAIN. PROPOSED STRUCTURE LOCATIONS AND INVERTS TO BE CONFIRMED BY ENGINEER PRIOR TO CONSTRUCTION.

PIPE TABLE			
PIPE NAME	SIZE	LENGTH	SLOPE
SD1	12" HDPE	12'	0.0083
SD2	12" HDPE	7'	0.0143
SD3	12" HDPE	17'	0.0124
SD4	12" HDPE	155'	0.0084
SD5	12" HDPE	171'	0.0129
SD6	12" HDPE	152'	0.0305
SD7	12" HDPE	36'	0.0050
SD8	12" HDPE	29'	0.0069
SD9	12" HDPE	92'	0.0065
SD10	12" HDPE	19'	0.0105
SD12	12" HDPE	69'	0.0065
SD16	18" HDPE	126'	0.0050
SD17	12" HDPE	9'	0.0167
SD24	12" HDPE	149'	0.0050
SD25	12" HDPE	31'	0.0113
SD81	12" HDPE	7'	0.0314
SD99	18" HDPE	164'	0.0159

STRUCTURE TABLE				
NAME	DIA.	RIM	INV IN/SIZE/FROM	INV OUT/SIZE/TO
AD2	4'	14.50		11.00/12"HDPE/AD3
AD3	4'	14.00	10.50/12"HDPE/AD2	10.40/12"HDPE/AD4
AD4	4'	13.50	9.80/12"HDPE/AD3	9.70/12"HDPE/DMH11
AD5	4'	19.80		16.15/12"HDPE/DMH38
AD6	4'	20.50	16.50/10"HDPE/FI3	16.33/12"HDPE/DMH38
AD7	4'	21.25		17.25/12"HDPE/DMH33
AD8	4'	17.30		13.50/10"HDPE/DMH18
AD9	4'	10.60		6.60/18"HDPE/AD10
AD10	4'	10.60	6.40/18"HDPE/AD9	6.30/24"HDPE/DMH24
AD11	4'	17.08		15.20/12"HDPE/DMH39
CB9	4'	20.32		16.10/12"HDPE/DMH26
CB10	4'	19.25		15.75/12"HDPE/DMH28 (DIV)
CB11	4'	15.82		12.32/12"HDPE/SSSF4 INLET 2
CB12	4'	19.78		15.40/12"HDPE/SSSF3 INLET 4
DMH6	5'	22.10	16.40/12"HDPE/AD1 16.40/12"HDPE/DMH1	16.30/18"HDPE/DMH10 (DIV)
DMH7 (DIV)	5'	20.10	15.70/12"HDPE/GARAGE ROOF DRAIN 15.70/18"HDPE/DMH26	15.60/12"HDPE/HDS2 15.60/18"HDPE/DMH23
DMH8	5'	19.23	12.91/24"HDPE/DMH23 10.22/24"HDPE/DMH9 15.35/12"HDPE/DMH28 (DIV)	10.12/24"HDPE/DMH31
DMH9	4'	19.50	10.63/24"HDPE/DMH27	10.53/24"HDPE/DMH8
DMH10 (DIV)	4'	21.80	15.80/12"HDPE/FI2 16.10/18"HDPE/DMH6	15.50/18"HDPE/DMH12 15.50/12"HDPE/HDS1
DMH11	5'	14.75	9.35/12"HDPE/AD4 8.66/24"HDPE/DMH31	8.55/30"HDPE/
DMH12	4'	22.32	16.05/18"HDPE/DMH13 15.15/18"HDPE/DMH10 (DIV)	11.65/24"HDPE/DMH27
DMH13	4'	21.90	16.50/18"HDPE/DMH4	16.40/18"HDPE/DMH12
DMH14	4'	22.35	17.05/12"HDPE/LRC ROOF DRAIN 1	16.95/12"HDPE/DMH15
DMH15	4'	20.90	16.60/12"HDPE/DMH20 16.60/12"HDPE/DMH14	16.50/18"HDPE/DMH16 (DIV)
DMH16 (DIV)	4'	20.80	16.40/18"HDPE/DMH15	16.30/12"HDPE/SSSF1 INLET 1 16.30/12"HDPE/DMH19
DMH17	4'	14.61	9.70/24"HDPE/DMH36 10.60/4"HDPE/C02 9.70/12"HDPE/OCS8	9.60/24"HDPE/DMH18
DMH18	4'	15.71	12.00/10"HDPE/AD8 9.40/12"HDPE/OCS9 9.40/24"HDPE/DMH17	9.30/24"HDPE/DMH34
DMH19	4'	22.25	11.90/12"HDPE/OCS4 15.70/12"HDPE/DMH16 (DIV)	11.80/12"HDPE/DMH32
DMH20	4'	22.40	17.75/12"HDPE/LRC ROOF DRAIN 3	17.65/12"HDPE/DMH15
DMH21	4'	20.40	14.80/10"HDPE/LRC ROOF DRAIN 2	14.70/12"HDPE/DMH22 (DIV)
DMH22 (DIV)	4'	18.50	14.50/12"HDPE/DMH21	14.20/12"HDPE/DMH43 14.20/12"HDPE/DMH34
DMH23	4'	19.06	13.22/12"HDPE/DMH29 (DIV) 14.66/18"HDPE/DMH7 (DIV)	13.12/24"HDPE/DMH8
DMH24	4'	12.19	7.20/12"HDPE/TRENCH DRAIN 6.17/24"HDPE/AD10	6.07/24"HDPE/
DMH26	4'	20.38	15.95/18"HDPE/DMH5 16.00/12"HDPE/CB9	15.85/18"HDPE/DMH7 (DIV)
DMH27	5'	20.23	10.90/24"HDPE/DMH12 10.98/18"HDPE/OCS6 10.82/12"HDPE/OCS5	10.72/24"HDPE/DMH9
DMH28 (DIV)	4'	19.40	15.52/12"HDPE/CB10 15.52/12"HDPE/CB15	15.42/12"HDPE/DMH8 15.42/12"HDPE/DMH41
DMH29 (DIV)	4'	17.18	13.40/6"HDPE/CHILD CARE ROOF DRAIN	13.30/12"HDPE/DMH23 13.30/12"HDPE/SSSF4 INLET 1
DMH30	5'	20.62	15.30/12"HDPE/HDS1	15.05/18"HDPE/SSSF2 INLET 1 15.05/12"HDPE/SSSF2 INLET 2
DMH31	5'	15.50	8.86/24"HDPE/OCS7 10.40/12"HDPE/OCS2 9.70/24"HDPE/DMH8	8.76/24"HDPE/DMH11
DMH32	4'	21.73	11.30/12"HDPE/DMH19 14.70/12"HDPE/OCS1	11.20/18"HDPE/DMH36
DMH33	4'	21.70	14.60/12"HDPE/DMH39 17.00/12"HDPE/AD7	14.50/12"HDPE/DMH35 (DIV)
DMH34	5'	17.78	9.00/24"HDPE/DMH18 8.90/12"HDPE/OCS3 11.50/12"HDPE/DMH22 (DIV)	8.80/24"HDPE/
DMH35 (DIV)	4'	21.40	14.33/12"HDPE/DMH33	14.23/12"HDPE/DMH36 14.23/12"HDPE/DMH44
DMH36	4'	22.30	13.90/12"HDPE/DMH35 (DIV) 10.80/18"HDPE/DMH32	10.70/24"HDPE/DMH17
DMH37	4'	19.78	15.40/12"HDPE/HDS2	15.30/12"HDPE/SSSF3 INLET 2 15.30/12"HDPE/SSSF3 INLET 3
DMH38	4'	22.20	15.87/12"HDPE/AD6 15.87/12"HDPE/AD5	15.77/12"HDPE/DMH39
DMH40	4'	21.30	15.85/8"HDPE/BEAN BLDG ROOF DRAIN 1	15.75/12"HDPE/DMH39
DMH41	4'	19.90	15.39/12"HDPE/DMH28 (DIV)	15.29/12"HDPE/SSSF3 INLET 1
DMH42	4'	17.89	14.35/8"HDPE/BEAN BLDG ROOF DRAIN 2	14.05/8"HDPE/SSSF5 INLET 2 14.05/8"HDPE/SSSF5 INLET 3
DMH43	4'	18.00	14.00/12"HDPE/DMH22 (DIV)	13.90/12"HDPE/SSSF6 INLET 1 13.90/12"HDPE/SSSF6 INLET 2
DMH44	4'	18.03	14.15/12"HDPE/DMH35 (DIV)	14.05/12"HDPE/SSSF5 INLET 1
FI2	2'	20.00		16.00/12"HDPE/DMH10 (DIV)
FI3	2'	22.00		18.00/10"HDPE/AD6
HDS1	5'	21.10	15.40/12"HDPE/DMH10 (DIV)	15.40/12"HDPE/DMH30
HDS2	4'	19.95	15.55/12"HDPE/DMH7 (DIV)	15.45/12"HDPE/DMH37
OCS1	4'	19.50	15.10/6"HDPE/	15.00/12"HDPE/DMH32
OCS2	4'	14.50	11.34/6"HDPE/	10.50/12"HDPE/DMH31
OCS3	4'	13.00	9.84/6"HDPE/	9.00/12"HDPE/DMH34
OCS4	4'	21.60	12.06/12"HDPE/SSSF1 OUTLET 1	11.96/12"HDPE/DMH19
OCS5	4'	20.40	10.97/12"HDPE/SSSF2 OUTLET	10.87/12"HDPE/DMH27
OCS6	4'	14.38	11.15/18"HDPE/SSSF3 OUTLET	11.05/18"HDPE/DMH27
OCS7	4'	15.82	9.08/12"HDPE/SSSF4 OUTLET	8.98/24"HDPE/DMH31
OCS8	4'	12.62	9.90/12"HDPE/SSSF5 OUTLET	9.80/12"HDPE/DMH17
OCS9	4'	17.60	9.70/12"HDPE/SSSF6 OUTLET	9.60/12"HDPE/DMH18

PIPE TABLE			
PIPE NAME	SIZE	LENGTH	SLOPE
SD11	12" HDPE	3'	0.0333
SD13	12" HDPE	66'	0.0114
SD14	12" HDPE	14'	0.0143
SD15	24" HDPE	18'	0.0050
SD18	18" HDPE	101'	0.0054
SD19	12" HDPE	14'	0.0057
SD20	12" HDPE	63'	0.0167
SD21	18" HDPE	3'	0.0333
SD22	12" HDPE	4'	0.0250
SD23	12" HDPE	39'	0.0154
SD26	18" HDPE	19'	0.0105
SD27	12" HDPE	12'	0.0117
SD28	12" HDPE	8'	0.0125
SD29	12" HDPE	75'	0.0067
SD30	12" HDPE	68'	0.0051
SD31	12" HDPE	54'	0.0056
SD32	12" HDPE	6'	0.0083
SD33	12" HDPE	11'	0.0209
SD34	12" HDPE	11'	0.0064
SD35	24" HDPE	59'	0.0053
SD36	18" HDPE	33'	0.0106
SD37	12" HDPE	2'	0.0500
SD38	10" HDPE	83'	0.0181
SD39	12" HDPE	11'	0.0055
SD40	12" HDPE	96'	0.0052
SD41	18" HDPE	3'	0.0167
SD42	18" HDPE	67'	0.0052
SD43	12" HDPE	3'	0.0167
SD44	24" HDPE	82'	0.0051
SD45	12" HDPE	26'	0.0115
SD46	12" HDPE	9'	0.0056
SD47	12" HDPE	1'	0.1500
SD48	18" HDPE	37'	0.0108
SD49	24" HDPE	138'	0.0054
SD50	18" HDPE	6'	0.0117
SD51	24" HDPE	20'	0.0105
SD52	12" HDPE	62'	0.0048
SD53	12" HDPE	1'	0.1000
SD54	12" HDPE	154'	0.0050
SD55	12" HDPE	2'	0.0150
SD56	30" HDPE	30'	0.0043
SD57	6" HDPE	62'	0.0258
SD58	12" HDPE	15'	0.0080
SD59	12" HDPE	43'	0.0081
SD60	12" HDPE	24'	0.0104
SD61	10" HDPE	79'	0.0190
SD62	10" HDPE	24'	0.0083
SD63	12" HDPE	39'	0.0051
SD64	12" HDPE	28'	0.0054
SD65	12" HDPE	16'	0.0050
SD66	24" HDPE	54'	0.0069
SD67	12" HDPE	43'	0.0047
SD68	18" HDPE	38'	0.0053
SD69	24" HDPE	54'	0.0050
SD70	24" HDPE	14'	0.0086
SD71	4" HDPE	7'	0.0171
SD72	4" HDPE	91'	0.0107
SD73	4" HDPE	12'	0.0058
SD74	24" HDPE	92'	0.0109
SD75	12" HDPE	68'	0.0397
SD76	12" HDPE	4'	0.0250
SD77	24" HDPE	20'	0.0050
SD78	12" HDPE	68'	0.0068
SD79	12" HDPE	4'	0.0250
SD80	12" HDPE	1'	0.1000
SD82	18" HDPE	11'	0.0136
SD83	6" HDPE	26'	0.0054
SD84	12" HDPE	118'	0.0051
SD85	12" HDPE	4'	0.0175
SD86	12" HDPE	20'	0.0040
SD87	12" HDPE	32'	0.0053
SD88	12" HDPE	2'	0.0500
SD89	4" HDPE	21'	0.0048
SD90	24" HDPE	30'	0.0067
SD91	12" HDPE	16'	0.0125
SD92	12" HDPE	56'	0.0050
SD93	12" HDPE	2'	0.0150
SD94	12" HDPE	9'	0.0222
SD95	12" HDPE	19'	0.0105
SD96	24" HDPE	40'	0.0075
SD97	12" HDPE	15'	0.0067
SD98	18" HDPE	51'	0.0184
SD99	18" HDPE	164'	0.0159
SD100	8" HDPE	1'	0.0500
SD101	6" HDPE	33'	0.0058
SD102	6" HDPE	22'	0.0091
SD103	8" HDPE	10'	0.0150
SD104	12" HDPE	3'	0.0167
SD105	12" HDPE	1'	0.0500
SD106	18" HDPE	2'	0.0500
SD107	12" HDPE	2'	0.0150
SD108	12" HDPE	15'	0.0220
SD109	8" HDPE	36'	0.0181
SD110	24" HDPE	25'	0.0052

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

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The Roux Institute

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Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

Woodard & Curran

LAND-USE PERMIT SET

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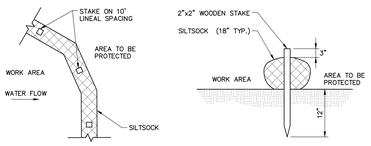
Number	Revision	Date

STATE OF MAINE
AMY N. LEBEL
17065
LICENSED
PROFESSIONAL ENGINEER

Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT N



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.

SEDIMENT BARRIER – SILT SOCK

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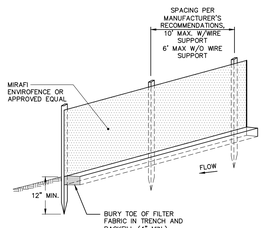

NOTES:

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

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

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

SEDIMENT BARRIER – SILTATION FENCE DETAIL

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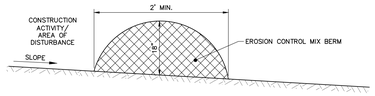

NOTES:

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.

SEDIMENT BARRIER – EROSION CONTROL MIX BERM

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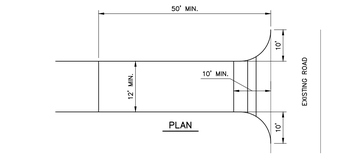
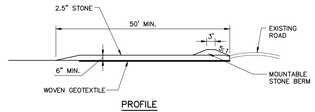


PLAN



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.

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

STABILIZED CONSTRUCTION ENTRANCE DETAIL

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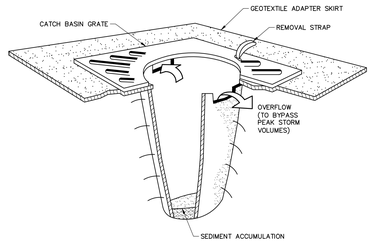


NOTES:

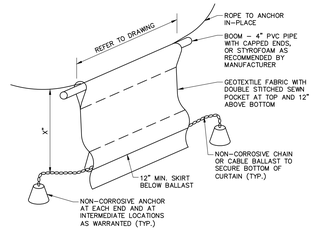
CATCH BASIN PROTECTION TO BE "SILTSACK" (BY ACF ENVIRONMENTAL) OR "STREAM GUARD" (BY FOSS ENVIRONMENTAL SERVICES).

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.

TEMPORARY INLET PROTECTION

N.T.S.



TURBIDITY CURTAIN

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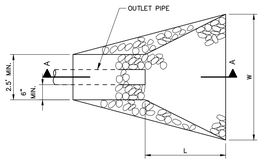
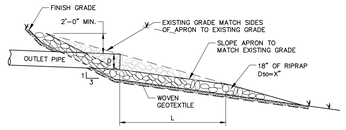


PLAN

PIPE DIA. (D, IN.)	LENGTH (L, FT.)	WIDTH (W, FT.)	D50 (X, IN.)
18"	6'	4.5'	6"
24"	8'	6'	6"
30"	10'	7.5'	12"



SECTION A–A

RIPRAP INLET/OUTLET PROTECTION

N.T.S.

EROSION AND SEDIMENT CONTROL NOTES

TEMPORARY EROSION CONTROL

CONTRACTOR SHALL PREPARE AND SUBMIT A SOIL EROSION AND WATER POLLUTION CONTROL PLAN TO ENGINEER.

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.

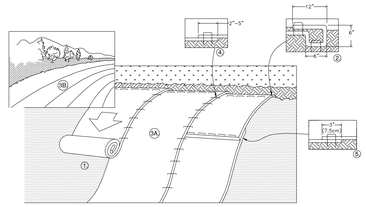
PERMANENT EROSION CONTROL:

MEASURE	DATES FOR USE	TIMING, ACTIVITY, AND LOCATION
PAVEMENT BASE COURSE FINAL COURSE	WHEN NO FROST IS IN GROUND	INSTALL ONLY IN AREAS SHOWN ON THE PLAN, SHORTLY AFTER PAVEMENT BASE IS BROUGHT TO FINAL GRADE. INSTALL NEAR COMPLETION OF PROJECT.
PERMANENT SEEDING	APRIL 15 TO SEPT. 15	ON FINAL GRADE AREAS, WITHIN 7 DAYS OF GRADE PREPARATION, PREPARE TOPSOIL, FOLLOWED BY SEED AND MULCH APPLICATION.
DORMANT SEEDING	SEPT. 16 TO APRIL 15	ON FINAL GRADE AREAS, WITH PREPARED TOPSOIL. APPLY SEED AT DOUBLE THE SPECIFIED RATE ON BARE SOIL, AND FOLLOW WITH AN APPLICATION OF WINTER MULCH.
GROUND COVER, TREES, SHRUBS	APRIL 15 TO NOV. 1	INSTALL WITH FINAL LANDSCAPING.
PERMANENT MULCH	ALL	INSTALL WITH FINAL LANDSCAPING.

INSPECTIONS:

REGULAR INSPECTIONS OF ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE MADE AT LEAST WEEKLY AND PRIOR TO AND FOLLOWING STORM EVENTS. MINIMUM INSPECTIONS SHALL BE MADE AS LISTED IN THE TABLE BELOW.

INSPECTED ITEM	LOOK FOR
MULCHED SURFACES	THIN MULCH OR INADEQUATE APPLICATION. WIND MOVEMENT.
SEEDED SURFACES	POOR SEED GERMINATION, LOSS OF MULCH. DEVELOPMENT OF RIVULETS.
SEDIMENT BARRIER	SEDIMENT BUILD–UP TO ONE HALF THE HEIGHT OF THE BARRIER, UNDERMINING OF THE BARRIER. SUPPORTING STAKES LOOSE, TOPPLED, OR UNMARKED. BREAKS IN BARRIER.
PERIMETER DIVERSION	DISCHARGE IS TO STABILIZED AREA. EROSION OR BREAKS IN BARRIER. SUPPORTING STAKES LOOSE, TOPPLED OR UNMARKED.
CATCH BASIN PROTECTION	SEDIMENT BUILD–UP AND STRUCTURE BLOCKAGES. SLOW FLOW/PONDING WATER. BREAKS IN FABRIC OR VOIDS IN BARRIER.
DEWATERING FILTER	BREAKS IN FABRIC OR SUPPORTING STRUCTURE. SLOW FLOW, INDICATING HIGH SEDIMENT BUILD–UP.
CONSTRUCTION ENTRANCE	SEDIMENTATION OF ROADWAYS. OFF–SITE DUST COMPLAINTS.



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED AS WELL AS REMOVING ANY PROTRUDING ROCKS, STUMPS OR ROOTS. DURING THE GROWING SEASON (APRIL 15–SEPTEMBER 15) USE RECP'S ON THE BASE OF GRASSED WATERWAYS, SOIL SLOPES HAVING A GRADE GREATER THAN 15%, OR ANYWHERE WHERE HAY MULCH HAS PROVEN TO BE INEFFECTIVE AT CONTROLLING SHEET EROSION. RECP'S ARE A MANUFACTURED COMBINATION OF MULCH AND NETTING DESIGNED TO PREVENT EROSION AND RETAIN SOIL MOISTURE. FOR OVER WINTER PROTECTION, APPLY RECP'S ON THE BASE AND SIDE SLOPES OF GRASSED WATERWAYS AND ON SLOPES STEEPER THAN AN 8% GRADE.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP's EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECP's.
3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" – 5" OVERLAP DEPENDING ON RECP's TYPE.
5. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECP's WIDTH. NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.
6. UNTIL GRASS IS ABUNDANT, INSPECT PERIODICALLY AND AFTER EACH RAINSTORM TO CHECK FOR EROSION. IMMEDIATELY REPAIR AND ADD MORE MULCH UNTIL GRASSES ARE FIRMLY ESTABLISHED. DO NOT MOW THE FIRST YEAR.

ROLLED EROSION CONTROL MATTING

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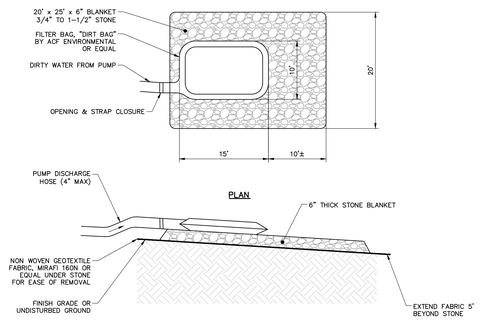


NOTES:

1. LOCATE DISCHARGE SITE ON FLAT UPLAND AREAS AS FAR AWAY AS POSSIBLE FROM STREAMS, WETLANDS, OTHER RESOURCES AND POINTS OF CONCENTRATED FLOW.
2. DISCHARGE NOT PERMITTED WITHIN 100' OF A NATURAL RESOURCE.
3. DOWNGRADIENT RECEIVING AREA MUST BE WELL VEGETATED OR OTHERWISE STABLE FROM EROSION, I.E. FOREST FLOOR OR COARSE GRAVEL/STONE.
4. NEVER DISCHARGE TO AREAS THAT ARE BARE OR NEWLY VEGETATED.
5. DIRT BAG MATERIAL BASED ON PARTICLE SIZE IN DIRTY WATER, I.E., FOR COARSE PARTICLES A WOVEN MATERIAL; FOR SILTS/CLAYS A NON–WOVEN MATERIAL.
6. DO NOT OVER PRESSURIZE DIRT BAG OR USE BEYOND CAPACITY.
7. CHANNELS DUG FOR DISCHARGING WATER FROM THE EXCAVATED AREA NEED TO BE STABLE. IF FLOW VELOCITIES CAUSE EROSION WITHIN THE CHANNEL THEN A DITCH LINING SHOULD BE USED.
8. BUCKETED WATER SHOULD BE DISCHARGED IN A STABLE MANNER TO THE SEDIMENT REMOVAL AREA. A SPLASH PAD OF RIPRAP UNDERLAIN WITH GEOTEXTILE MAY BE NECESSARY TO PREVENT SCOURING OF SOIL.
9. DEWATERING IN PERIODS OF INTENSE, HEAVY RAIN, WHEN THE INFILTRATIVE CAPACITY OF THE SOIL IS EXCEEDED, SHOULD BE AVOIDED.
10. INSTALL DIVERSION DITCHES OR BERMS TO MINIMIZE THE AMOUNT OF CLEAN STORMWATER RUNOFF ALLOWED INTO THE EXCAVATED AREA.
11. DURING THE ACTIVE DEWATERING PROCESS, INSPECTION OF THE DEWATERING FACILITY SHOULD BE REVIEWED FREQUENTLY. SPECIAL ATTENTION SHOULD BE PAID TO THE BUFFER AREA FOR ANY SIGN OF EROSION AND CONCENTRATION OF FLOW THAT MAY COMPROMISE THE BUFFER AREA. OBSERVE WHERE POSSIBLE THE VISUAL QUALITY OF THE EFFLUENT AND DETERMINE IF ADDITIONAL TREATMENT CAN BE PROVIDED.
12. EROSION CONTROL BARRIERS ARE REQUIRED AROUND DEWATERING DISCHARGE SEDIMENT CONTROL DEVICE.

DEWATERING DISCHARGE SEDIMENT CONTROL DEVICE

N.T.S.

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 SEDIMENT BARRIER LIKE SILT SOCK, SILT FENCE, AND EROSION CONTROL MIX BERMS, CATCHBASIN TEMPORARY INLET PROTECT 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. HTTP://MAINE.GOV/DEP/BLWQ/DOCSTANDARDS/ESCBMPS/

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

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

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

F. CONSTRUCTION STAGING SHALL BE CONDUCTED IN A WAY TO MINIMIZE THE POTENTIAL FOR STORMWATER RUN–ON TO DISTURBED AREAS. SEDIMENT BARRIER AND ANY OTHER RELEVANT EROSION CONTROL MEASURES SHALL BE MOVED AND/OR ADDED TO, TO ACCOUNT FOR CHANGES IN DISTURBED AREA DUE TO CONSTRUCTION STAGING..

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, 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 15. 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.

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

Woodard & Curran

LAND-USE PERMIT SET

NOT FOR CONSTRUCTION

Number	Revision	Date

STATE OF MAINE
AMY N. LEBEL
17065
LICENSED
PROFESSIONAL ENGINEER

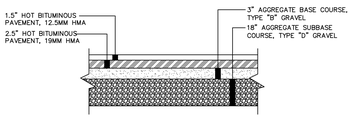
Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 MARCH 2024
Scale	AS NOTED

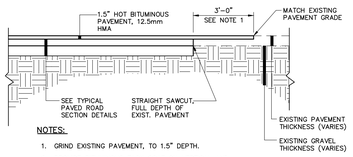
Drawing Title

CIVIL DETAILS - 1

D-401

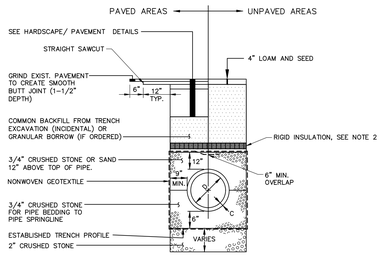


BITUMINOUS PAVEMENT SECTION
N.T.S.



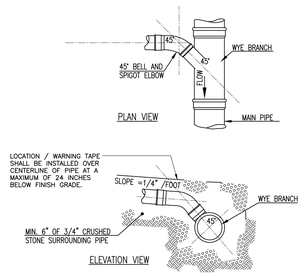
NOTES:
1. GRIND EXISTING PAVEMENT, TO 1.5" DEPTH.
2. PROVIDE BITUMINOUS TACK COAT ON VERTICAL AND HORIZONTAL SURFACES PRIOR TO PAVING.
3. DETAIL APPLICABLE TO PAVEMENT BUTT JOINTS AT ROADWAY WORK LIMITS. REFER TO PIPE INSTALLATION DTL. OR PAVED ROAD SECTION DTLS. FOR TRENCH REPAIR REQUIREMENTS.

PAVEMENT BUTT JOINT DETAIL
N.T.S.

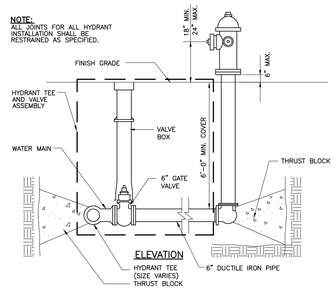


NOTES:
1. DEPTH AND TYPE OF PAVEMENT AND AGGREGATE COURSES SHALL BE PER PLANS. SEE CIVIL & LANDSCAPING PAVEMENT DETAILS.
2. PROVIDE RIGID INSULATION WHERE COVER OVER PIPE IS LESS THAN 4 FEET. THE THICKNESS OF THE RIGID INSULATION SHALL BE SUFFICIENT TO PROVIDE AN EQUIVALENT OF 4'-0" OF SOIL ABOVE THE PIPE. ONE INCH OF RIGID INSULATION SHALL BE EQUIVALENT TO ONE FOOT OF SOIL. INSULATION SHALL EXTEND A MINIMUM 9' FROM OUTSIDE EDGE OF PIPE, BUT SHALL NOT EXCEED TRENCH WIDTH.
3. STORM DRAIN IN THE SHERWOOD STREET RIGHT-OF-WAY SHALL MEET THE MATERIAL SPECIFICATIONS IN SECTION 2 OF THE CITY OF PORTLAND TECHNICAL MANUAL.

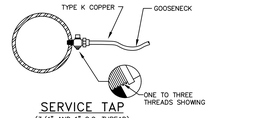
TYPICAL STORMDRAIN/ SEWER PIPE TRENCH INSTALLATION
N.T.S.



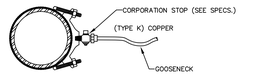
TYPICAL LATERAL WYE CONNECTION DETAILS
N.T.S.



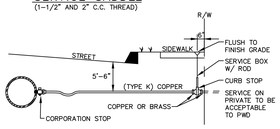
TYPICAL HYDRANT ASSEMBLY DETAIL
N.T.S.



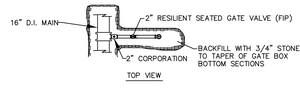
SERVICE TAP
(3/4" AND 1" C.C. THREAD)



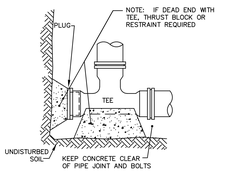
SERVICE SADDLE
(1-1/2" AND 2" C.C. THREAD)



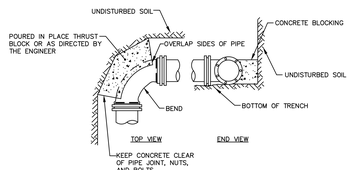
TYPICAL SERVICE CONNECTION
N.T.S.



SIDE-ARM BLOW-OFF 4" & LARGER MAINS
N.T.S.

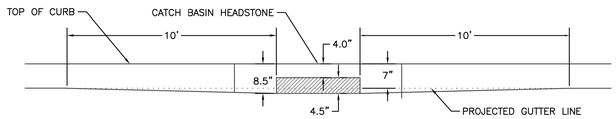


STANDARD TEE BLOCKING
N.T.S.



STANDARD BEND BLOCKING
N.T.S.

NOTE:
DISH 10' EITHER SIDE OF HEADSTONE FOR CATCH BASIN AT LOW POINT



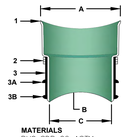
TYPICAL PAVEMENT GRADING FOR CATCH BASIN INLETS (IN CITY RIGHT-OF-WAY)
N.T.S.

CORRUGATED HDPE/PP BELL GRAVITY APPLICATIONS

A. BELL END ACCEPTS CORRUGATED HDPE/PP DUAL WALL PIPE--ADS/HANCOR INC. SPECIFICATIONS IN 4", 6", 8", 10", 12", 15", 18", 21", 24", AND 30" SIZES.

B. CURVATURE VARIES WITH MAINLINE DIAMETERS.

C. SPIGOT END PVC SDR 35, ASTM D3034 DIAMETERS: 4", 6", 8", 10", 12", 15", 18", 21", 24" AND 30"



PART	PART NAME
1	HUB ADAPTOR
2	SECURING CLAMP*
3	RUBBER SLEEVE (AVAILABLE IN NITRILE AND EPDM BY SPECIAL ORDER)
3A	UPPER SEGMENT**
3B	LOWER SEGMENT**
4	(NOT SHOWN) ADS/HANCOR INC. SUPPLIES VALLEY GASKET

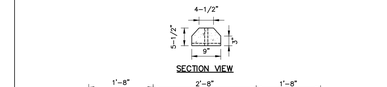
MATERIALS
PVC SDR 26 ASTM D3034
BAND SS #301
SCREW SS #305
HOUSING SS #301
ASTM F477

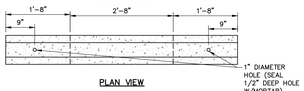
* OPTIONAL: #316 STAINLESS STEEL BAND, SCREW AND HOUSING
** DISTANCE BETWEEN 4A AND 4B WILL VARY BY PRODUCT TYPE
*** WILL NOT APPEAR ON RUBBER SLEEVES FOR CONCRETE OR CLAY PIPE

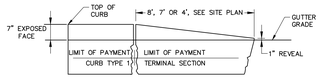
INSERTA TEE SIZE	HOLE DIAMETER
4" (100 mm)	4 5/8" (114 mm)
6" (150 mm)	6 1/2" (165 mm)
8" (200 mm)	8 3/4" (222 mm)
10" (250 mm)	10 7/8" (276 mm)
12" (300 mm)	12 7/8" (327 mm)
15" (375 mm)	15 15/16" (402 mm)
18" (450 mm)	19 3/4" (503 mm)
21" (525 mm)	22 3/4" (573 mm)
24" (600 mm)	25 3/4" (643 mm)
30" (750 mm)	32 1/32" (826 mm)

NOTE: RECOMMENDED METHOD OF CUTTING HOLE IS WITH HOLE SAW FOR PVC AND OTHER PLASTICS, AND DIAMOND BIT FOR CONCRETES, CLAY, FRP AND D.I. (SEE INSTALLATION INSTRUCTIONS. HOLE SAWS ARE AVAILABLE FOR PURCHASE OR RENT.)

INSERTA TEE DETAIL
N.T.S.

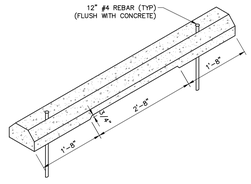






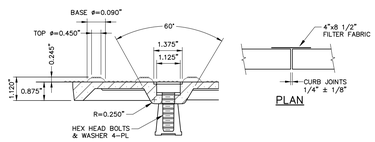
TERMINAL SECTION TYPE "1"

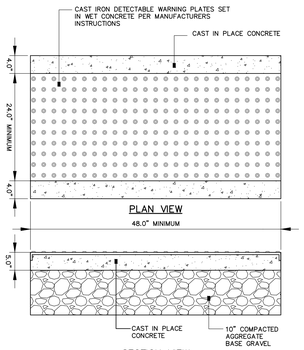
TERMINAL CURB SECTION
N.T.S.



NOTE:
1. CONCRETE SHALL BE 4,000 PSI.

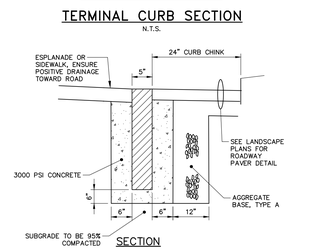
WHEEL STOP
N.T.S.





SIDEWALK RAMP DETECTABLE WARNING
N.T.S.

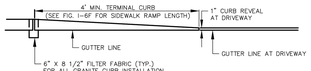
NOTES:
1. ALL DETECTABLE WARNING PLATES SHALL BE UNCOATED CAST IRON. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
2. CAST IN PLACE CONCRETE SHALL MEET SPECIFICATIONS FOR MAINE D.O.T. CLASS A STRUCTURAL CONCRETE, MINIMUM COMPRESSIVE STRENGTH 4,000 PSI. THE EXPOSED CONCRETE BORDER SHALL RECEIVE 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.



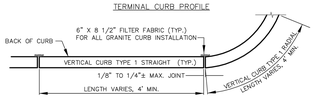
NOTES:
1. THE MINIMUM HEIGHT OF THE CONCRETE BACKING SHALL BE 10-INCHES OR TO THE BOTTOM OF THE HOT MIX ASPHALT PAVEMENT, WHICHEVER IS GREATER, MEASURED FROM THE BOTTOM OF CURB.
2. WOODEN SHIMS MAY BE USED TO SET CURB.

TYPICAL FLUSH CURB INSTALLATION (IN CITY RIGHT-OF-WAY)
N.T.S.

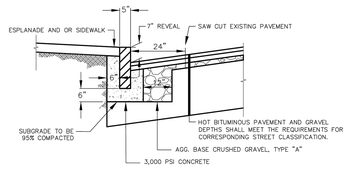
NOTE: AGGREGATE TYPES PER MDOT SECTION 304.02



TERMINAL CURB PROFILE



VERTICAL GRANITE CURB PLAN VIEW

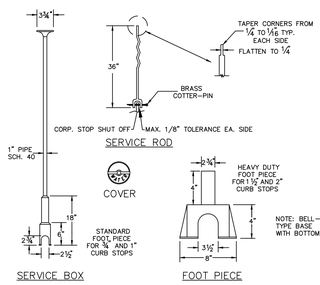


VERTICAL GRANITE CURB CROSS SECTION

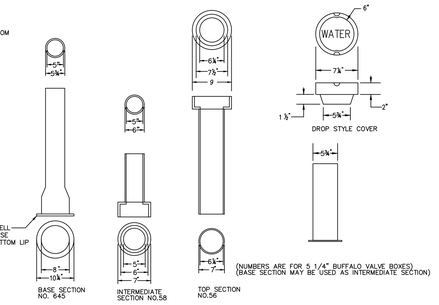
NOTES:
1. INDIVIDUAL PIECES OF CURB SHORTER THAN 4 L.F. ARE NOT ALLOWED, WITH THE EXCEPTION OF RADIAL CURB.
2. THE MINIMUM HEIGHT OF THE CONCRETE BACKING SHALL BE 10-INCHES OR TO THE BOTTOM OF THE HOT MIX ASPHALT PAVEMENT, WHICHEVER IS GREATER, MEASURED FROM THE BOTTOM OF CURB.
3. CURBING SHALL BE SET IN A 6-INCH BED OF POURED IN PLACE 3,000 PSI CONCRETE MIX.
4. WOODEN SHIMS MAY BE USED TO SET CURB.

VERTICAL GRANITE CURB (IN CITY RIGHT-OF-WAY)
N.T.S.

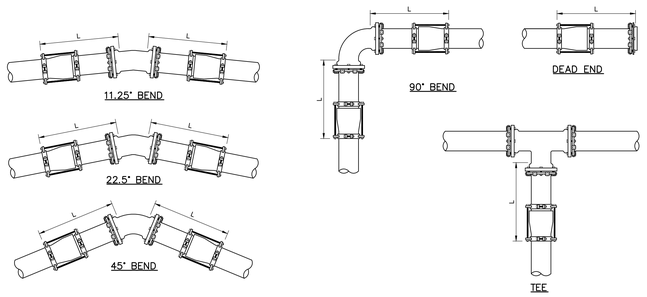
VALVE WITH VALVE BOX
N.T.S.



NOTE : ANY EXTENSION OF SERVICE BOX REQUIRES:
1) 1" FEMALE IRON PIPE COUPLING
2) 1" THREADED PIPE
(THIS IS TO BE A NON-WELDED, TWO PIECE ARRANGEMENT. SLIP ON ADAPTERS ARE NOT PERMISSIBLE.)



VALVE BOX & COVER
N.T.S.

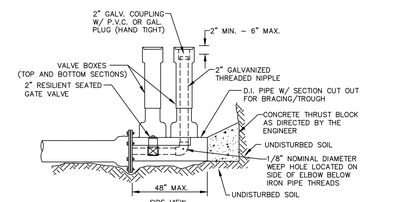


DIAMETER	REQUIRED LENGTH OF RESTRAINED JOINT PIPE ON BOTH SIDES OF FITTING — HORIZONTAL BEND				REQUIRED LENGTH OF RESTRAINED JOINT PIPE
	11.25°	22.5°	45°	TEE/90°	DEAD END
6"	2'	4'	9'	21'	51'
8"	3'	6'	11'	27'	67'
10"	4'	7'	14'	32'	81'
12"	4'	8'	16'	38'	96'
16"	5'	10'	20'	48'	123'

ASSUMED PARAMETERS:	
LAYING CONDITION	TYPE 5
SOIL DESIGNATION	SILT 1
DEPTH COVER	5 FT
DESIGN PRESSURE	200 PSI
SAFETY FACTOR	1.5

NOTES:
1. RESTRAINED JOINTS SHALL BE MECHANICAL JOINT OR PUSH-ON RESTRAINED JOINT AS SPECIFIED IN SECTION 33 14 11.01.

THRUST RESTRAINT DETAIL
N.T.S.



STANDARD 2" BLOW OFF
N.T.S.

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

The Roux Institute
LVX VERITAS VIRTVS

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

Woodard & Curran

LAND-USE PERMIT SET

NOT FOR CONSTRUCTION

Number	Revision	Date

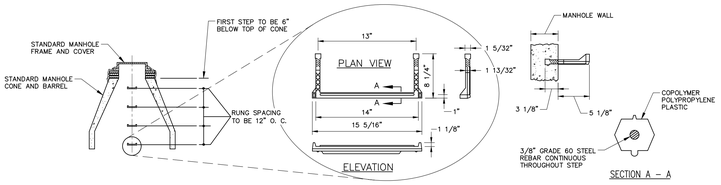
STATE OF MAINE
AMY N. LEBEL
17065
LICENSED
PROFESSIONAL ENGINEER

Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 MARCH 2024
Scale	AS NOTED

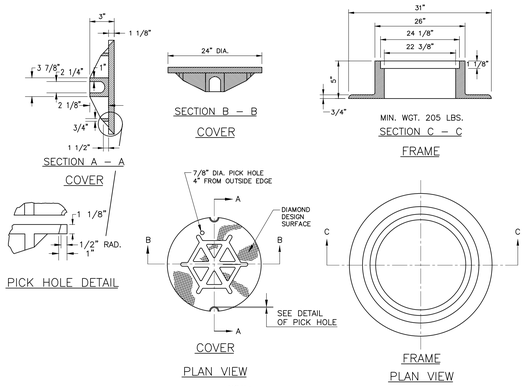
Drawing Title
CIVIL DETAILS - 2

D-402



PLASTIC MANHOLE STEPS

N.T.S.



NOTE:

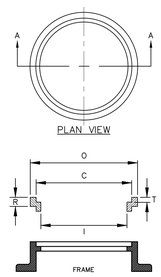
FOR ALL CROSS COUNTRY MANHOLES (LAWN AREAS), USE PAM REXUS MANHOLE COVERS BY CERTAINTEED.

TYPE "A" CAST IRON MANHOLE COVER AND FRAME

N.T.S.

GENERAL NOTES FOR MANHOLES AND CATCH BASINS

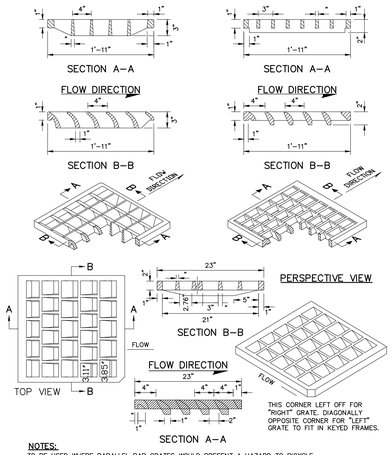
1. ALL CONCRETE SHALL BE CLASS "A" AND HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 LBS. PER SQ. INCH AT THE END OF 28 DAYS, UNLESS OTHERWISE NOTED.
2. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPEC. C–478.
3. ALL MANHOLES SHALL HAVE A BITUMINOUS WATERPROOFING APPLIED TO THE EXTERIOR SURFACE. IF CONSTRUCTED OF BRICK MASONRY, SURFACE SHALL BE PLASTERED WITH A SMOOTH MORTAR FINISH 3/8" THICK. AFTER THE MORTAR HAS SET, THE SURFACE SHALL BE WATERPROOFED AS REQUIRED BY SUPPLEMENTAL SPECIFICATIONS SECTION 604.
4. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48–CLASS 35. ALL PARTS OF CASTINGS, EXCEPT FINISHED SURFACE, SHALL RECEIVE A COAT OF COAL TAR PITCH VARNISH OR ASPHALTUM PAINT WHICH SHALL BE SMOOTH AND TOUGH BUT NOT BRITTLE.
5. MANHOLES MAY BE CONSTRUCTED OF MASONRY, PRECAST REINFORCED CONCRETE, OR CAST IN PLACE.
6. CONTRACTOR SHALL SUBMIT ANTIFLOATATION CALCULATIONS FOR ALL MANHOLE AND CATCH BASIN STRUCTURES.
7. ALL PRECAST MANHOLES AND CATCH BASINS SHALL BE IDENTIFIED BY STATION, OFFSET, AND STRUCTURE ID PAINTED ON THE SIDE OF THE STRUCTURE BY THE MANUFACTURER.
8. STORM AND SEWER MANHOLES SHALL HAVE SOLID COVERS WITH ONE DRILLED PICK HOLE.
9. EXISTING MANHOLES, CATCH BASINS, FRAMES, AND COVERS SHALL BE SALVAGED BY THE CONTRACTOR, AND SHALL REMAIN THE PROPERTY OF THE CITY OF PORTLAND.
10. WHEN THE FLOW CHANGES DIRECTION IN A MANHOLE, THE CHANNEL ALIGNMENT SHALL FOLLOW A SMOOTH RADIUS. CHANNELS SHALL BE FORMED TO ACCEPT ALL INLET PIPES.
11. ON STORM AND SEWER MANHOLES, THE SHELF AND CHANNEL SHALL BE FORMED BY BRICK SET IN CEMENT MORTAR OR BY FACTORY PRE–CAST CONCRETE. SUCH PRE–CAST CONCRETE SHALL BE EPOXY COATED AND THE SHELF SHALL HAVE A PERMANENT NON–SKID SURFACE.



SIZE	C	R	T	O	I	Wt.
R241 1/2	24	1 1/2	1 1/8	26 1/4	22 1/2	60
R242	24	2	1 1/8	26 1/4	22 1/2	80
R242 1/2	24	2 1/2	1 1/8	26 1/4	22	100
R243	24	3	1 1/8	26 1/4	22	120

MANHOLE RISER RING

N.T.S.

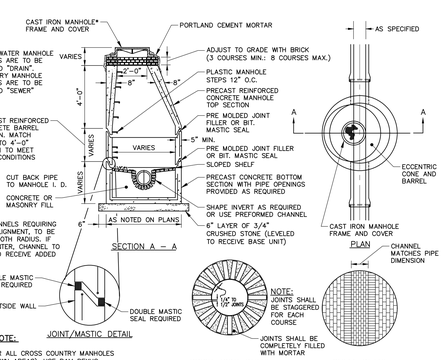


NOTES:

TO BE USED WHERE PARALLEL BAR GRATES WOULD PRESENT A HAZARD TO BICYCLE TRAFFIC. FOR USE ON CATCH BASIN TYPES: A1–C, A2–C, A5–C, B1–C, B2–C, B5–C, F3–C, F4–C, F5–C, F6–C.

"CASCADE–TYPE" GRATES

N.T.S.



NOTE:

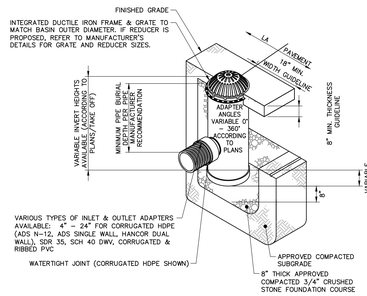
MANHOLE CHANNELS REQUIRING CHANGE OF ALIGNMENT, TO BE BUILT ON SMOOTH RADIUS. IF SIDE PIPES ENTER, CHANNEL TO BE SHAPED TO RECEIVE ADDED SIDE FLOW.

*NOTE:

FOR ALL CROSS COUNTRY MANHOLES (LAWN AREAS), USE PAM REXUS MANHOLE COVERS BY CERTAINTEED.

PRECAST CONCRETE MANHOLE

N.T.S.

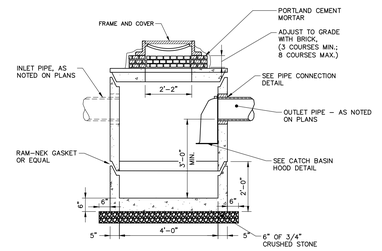


NOTES:

1. INSTALL BASIN IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS
2. PRODUCT SHALL BE NYLOPLAST DRAIN BASIN MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS (ADS) OR APPROVED EQUAL.
3. GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70–50–05.
4. FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70–50–05.
5. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTORATIONS.
6. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC.
7. ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°.

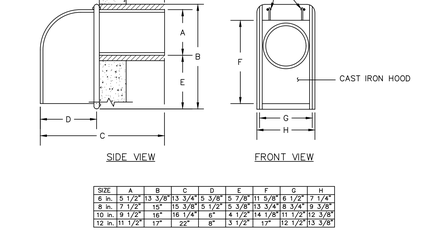
FIELD INLET

N.T.S.



PRECAST CONCRETE CATCH BASIN

N.T.S.

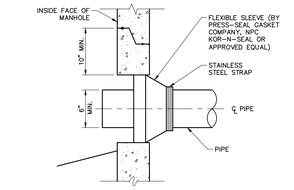


SIZE	A	B	C	D	E	F	G	H
6 in.	5 1/2"	13 3/8"	13 3/4"	5 3/8"	5 7/8"	11 5/8"	6 1/2"	7 1/4"
8 in.	7 1/2"	15"	15 3/8"	5 1/2"	5 3/8"	13 3/4"	8 3/4"	9 3/8"
10 in.	9 1/2"	16"	16 1/4"	6"	4 1/2"	14 7/8"	11 1/2"	12 3/8"
12 in.	11 1/2"	17"	22"	8"	3 1/2"	17"	12 1/2"	13 3/8"

NOTE: PROVIDE IN CATCH BASINS IN PAVED AREAS ONLY.

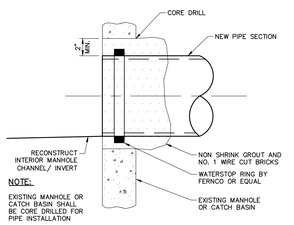
CATCH BASIN HOOD

N.T.S.



NEW PIPE TO NEW STRUCTURE CONNECTION DETAIL

N.T.S.

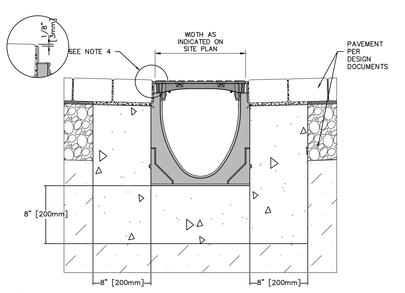


NOTE:

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

NEW PIPE TO EXISTING STRUCTURE

N.T.S.



NOTES:

1. IT IS NECESSARY TO ENSURE MINIMUM DIMENSIONS SHOWN ARE SUITABLE FOR EXISTING GROUND CONDITIONS. ENGINEERING ADVICE MAY BE REQUIRED.
2. MINIMUM CONCRETE STRENGTH OF 4,000 PSI IS RECOMMENDED. CONCRETE SHOULD BE VIBRATED TO ELIMINATE AIR POCKETS.
3. EXPANSION AND CONTRACTION CONTROL JOINTS AND REINFORCEMENT ARE RECOMMENDED TO PROTECT CHANNEL AND CONCRETE SURROUND. ENGINEERING ADVICE MAY BE REQUIRED.
4. THE FINISHED LEVEL OF THE CONCRETE SURROUND MUST BE APPROX. 1/8" [3mm] ABOVE THE TOP OF THE CHANNEL EDGE.
5. CONCRETE BASE THICKNESS SHOULD MATCH SLAB THICKNESS. ENGINEERING ADVICE MAY BE REQUIRED TO DETERMINE PROPER LOAD CLASS.
6. REFER TO ACO'S LATEST INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS.

SPECIFICATION CLAUSE

K200 KLASSIKDRAIN "DRAINLOK" LOAD CLASS C

GENERAL

THE SURFACE DRAINAGE SYSTEM SHALL BE POLYMER CONCRETE K200 CHANNEL SYSTEM WITH GALVANIZED STEEL EDGE RAILS AS MANUFACTURED BY ACO POLYMER PRODUCTS, INC.

MATERIALS

CHANNELS SHALL BE MANUFACTURED FROM POLYESTER RESIN POLYMER CONCRETE WITH AN INTEGRALLY CAST–IN GALVANIZED STEEL EDGE RAIL. MINIMUM PROPERTIES OF POLYMER CONCRETE WILL BE AS FOLLOWS:

COMPRESSIVE STRENGTH: 14,000 PSI
FLEXURAL STRENGTH: 4,000 PSI
TENSILE STRENGTH: 1,500 PSI
WATER ABSORPTION: 0.07% FROST PROOF YES
DILUTE ACID AND ALKALI RESISTANT YES
B117 SALT SPRAY TEST COMPLIANT YES

THE SYSTEM SHALL BE 8" (200mm) NOMINAL INTERNAL WIDTH WITH A 10.2" (260mm) OVERALL WIDTH AND A BUILT–IN SLOPE OF 0.5%. CHANNEL INVERT SHALL HAVE DEVELOPED "V" SHAPE. ALL CHANNELS SHALL BE INTERLOCKING WITH A MALE/FEMALE JOINT.

THE COMPLETE DRAINAGE SYSTEM SHALL BE BY ACO POLYMER PRODUCTS, INC. ANY DEVIATION OR PARTIAL SYSTEM DESIGN AND/OR IMPROPER INSTALLATION WILL VOID ANY AND ALL WARRANTIES PROVIDED BY ACO POLYMER PRODUCTS, INC.

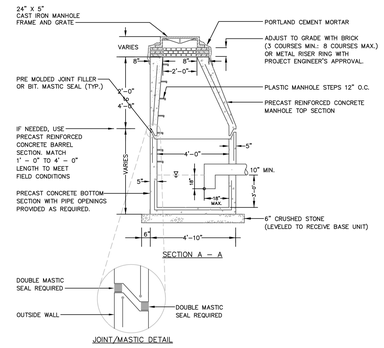
CHANNEL SHALL WITHSTAND LOADING TO PROPER LOAD CLASS AS OUTLINED BY EN 1433. GRATE TYPE SHALL BE APPROPRIATE TO MEET THE SYSTEM LOAD CLASS SPECIFIED AND INTENDED APPLICATION. GRATES SHALL BE SECURED USING "DRAINLOK" BOLTLESS LOCKING SYSTEM. CHANNEL AND GRATE SHALL BE CERTIFIED TO MEET THE SPECIFIED EN 1433 LOAD CLASS. THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.

TRENCH DRAIN

N.T.S.

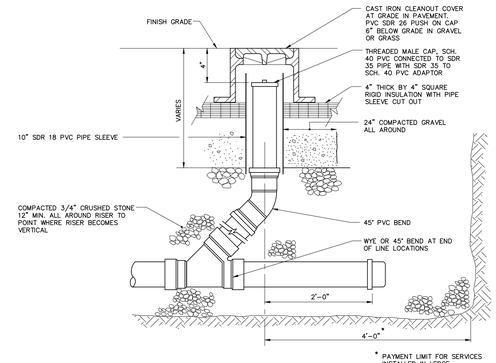
NOTES:

- FOR USE IN PARTIALLY OR TOTALLY ENCLOSED PARKING GARAGES, AUTOMOTIVE REPAIR FACILITIES OR ANY OTHER PROPOSED STRUCTURE WHERE DEEMED APPROPRIATE BY THE CITY ENGINEER.
- DISCHARGE SHALL BE TO SANITARY SEWER.
- A VENT PIPE MAY BE REQUIRED THAT HAS A VERTICAL OUTLET OFF TO THE SIDE OF THE STRUCTURE.
- AN OIL ABSORBENT BOOM IS REQUIRED TO BE PLACED WITHIN THE MANHOLE ON THE WATER SURFACE AND REPLACED AT A MINIMUM ANNUALLY.



OIL / GRIT SEPARATOR

N.T.S.



CLEANOUT DETAIL

N.T.S.

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

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LAND-USE PERMIT SET

NOT FOR CONSTRUCTION

Number	Revision	Date

STATE OF MAINE
AMY N. LEBEL
17065
LICENSED PROFESSIONAL ENGINEER

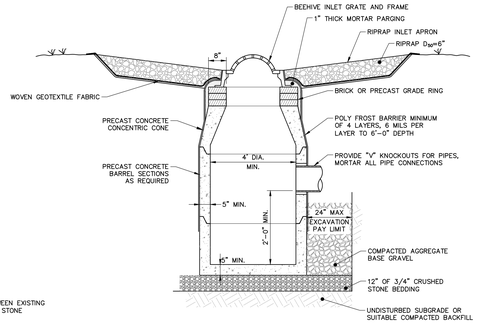
Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 MARCH 2024
Scale	AS NOTED

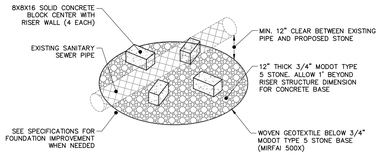
Drawing Title

CIVIL DETAILS - 3

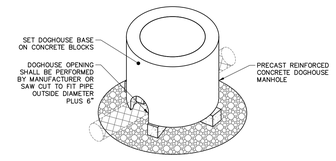
D-403



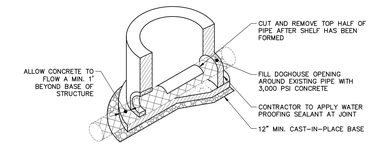
AREA DRAIN IN RIPRAP
N.T.S.



BASE ISOMETRIC VIEW



RISER ISOMETRIC VIEW

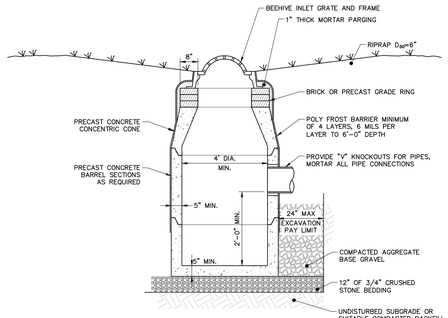


FOUNDATION SECTION VIEW

NOTES:

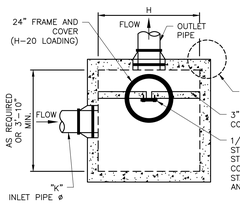
1. ASSEMBLED DOGHOUSE MANHOLE SHALL BE IN ACCORDANCE WITH ALL REQUIREMENTS OF PRECAST MANHOLE DETAIL ON THIS SHEET.

DOGHOUSE MANHOLE
NOT TO SCALE



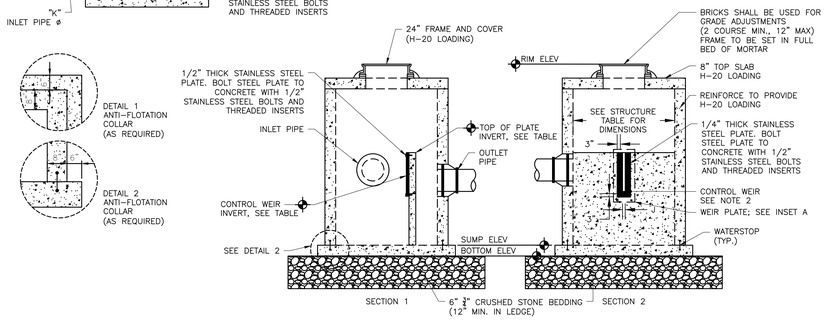
AREA DRAIN IN VEGETATION
N.T.S.

OUTLET CONTROL STRUCTURE – DIMENSIONS/ ELEVATIONS		
LOCATION	TOP OF PLATE B (ELEV.)	CONTROL WEIR C (ELEV.)
OCS1	19.34	17.34
OCS2	14.34	12.34
OCS3	12.84	10.84
OCS4	15.80	13.80
OCS5	14.06	12.06
OCS6	14.41	12.41
OCS7	12.08	10.08
OCS8	13.17	11.17
OCS9	12.60	10.60

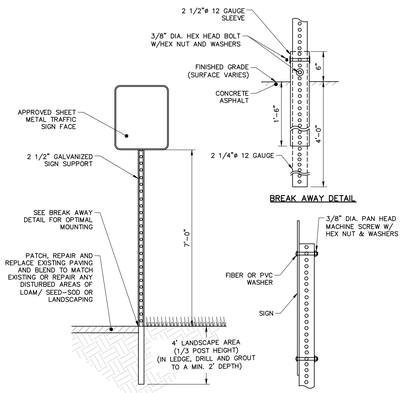


NOTES:

1) ALL CEMENT CONCRETE TO BE 4000 PSI (MIN).
2) CONTROL WEIR SHALL BE SIZED TO MITIGATE DESIGN STORM AS REQUIRED BY THE REGULATIONS AND IN ACCORDANCE WITH THE APPROVED DRAINAGE CALCULATIONS. STAINLESS STEEL PLATE SHALL BE USED FOR CONTROL WEIRS LESS THAN 2 INCHES WIDE.
3) ALL STAINLESS STEEL SHALL BE GRADE 316.
4) MINIMUM EMBANKMENT ELEVATION TO BE 12" ABOVE 50-YEAR STORM ELEVATION.



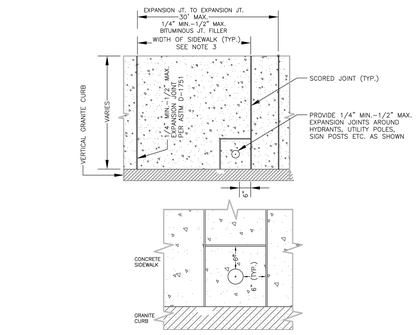
OUTLET CONTROL STRUCTURE
N.T.S.



NOTES:

1. ALL HARDWARE SHALL BE STAINLESS STEEL.

TRAFFIC SIGN POST
N.T.S.

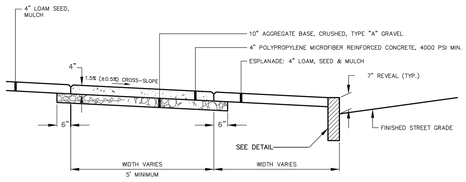


CONCRETE SIDEWALK JOINT NOTES:

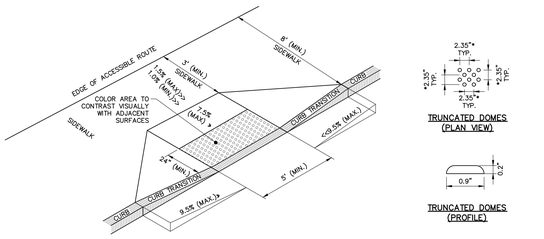
1. EXPANSION JOINTS SHALL BE LOCATED WHERE SIDEWALK ABUTS DRIVEWAYS, CURB OR OTHER ADJACENT STRUCTURES.
2. SLABS SHALL BE PLACED ALTERNATELY IN LENGTHS, NOT TO EXCEED 30 LINEAR FEET OR AS DIRECTED AND SHALL BE SEPARATED BY AN EXPANSION JOINT OF PREFORMED EXPANSION FILLER 1/4" MIN.–1/2" MAX. IN THICKNESS AND SHALL EXTEND THE FULL LENGTH/DEPTH OF THE CONCRETE.
3. THE SIDEWALK SURFACE SHALL BE SCORED INTO BLOCK UNITS. THE DEPTH OF SCORING SHALL BE AT LEAST ONE QUARTER OF THICKNESS OF THE SLABS (1" TYP.). SCORED JOINTS MUST BE COMPLETED AS PART OF THE FINISHING PROCESS. SAW CUTTING OF JOINTS IS NOT ALLOWED. SCORED JOINTS SHALL BE PLACED AT THE FOLLOWING LOCATIONS:
   A. IN LOCATIONS TO ENSURE BLOCK UNITS DO NOT EXCEED 36 SQUARE FEET.
   B) AT THE SPACING THAT MATCHES ADJACENT TIP DOWN CURB
   C. EXTENSION OF EXPANSION JOINTS LOCATED AT HYDRANTS & UTILITY POLES.
4. ALL OUTSIDE EDGES OF THE SLAB AND ALL JOINTS SHALL BE ROUNDED WITH A 1/4" RADIUS EDGING TOOL.
5. CONCRETE SHALL BE FINISHED BY MEANS OF A FLOAT, STEEL TROWELED AND BROOMED WITH A FINE BRUSH IN A TRANSVERSE DIRECTION.

SIDEWALK EXPANSION JOINT (IN CITY RIGHT-OF-WAY)
N.T.S.

NOTE
CONCRETE SIDEWALKS TO BE TREATED WITH CONSOLIDEOX SALTGUARD WB OR APPROVED EQUAL. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR APPLICATION.



REINFORCED CONCRETE SIDEWALK (IN CITY RIGHT-OF-WAY)
N.T.S.

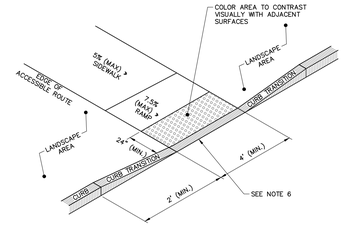


*DIMENSIONS ARE CENTER TO CENTER

NOTES:

1. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5% (1% MIN.)
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE CURB RAMPS SHALL BE 7.5%.
4. A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E. HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.)
5. BASE OF RAMP SHALL BE GRADED TO PREVENT PONDING.
6. ADJACENT SURFACES AT TRANSITIONS SHALL BE FLUSH WITH CURB RAMPS.
7. SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
8. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5'x5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
9. ELIMINATE ALL CURBING AT RAMP (OTHER THAN VERTICAL CURBING, WHICH SHALL BE SET FLUSH) WHERE IT ABUTS ROADWAY OR OTHERWISE INDICATED.
10. DETECTABLE WARNING SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES.
11. TRUNCATED DOMES AND ALL RELATED INSTALLED SURFACES TO BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS. ALL DETECTABLE WARNING SURFACE INSTALLATIONS SHALL BE AT A MINIMUM AT LEAST AS NON SKID AS THE SURROUNDING PEDESTRIAN SURFACES.
12. FOR ALLOWABLE SLOPE OF ACCESSIBLE ROUTE ON EXISTING SITE, SEE SECTION 405 OF THE ADA STANDARD FOR ACCESSIBLE DESIGN.

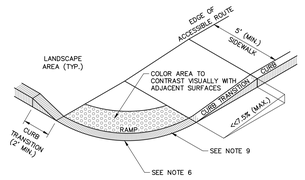
ACCESSIBLE CURB RAMP (ACR) – TYPE 'A'
N.T.S.



NOTE:

1. ACCESSIBLE CURB RAMP NOTES PROVIDED UNDER "ACCESSIBLE CURB RAMP – TYPE 'A' DETAIL ON THIS SHEET ARE APPLICABLE.

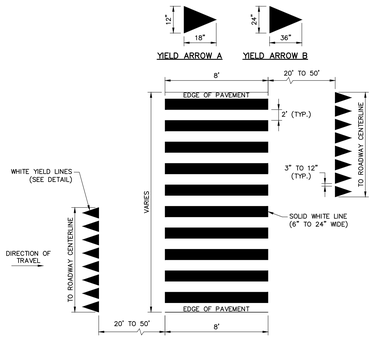
ACCESSIBLE CURB RAMP (ACR) – TYPE 'D'
N.T.S.



NOTE:

1. ACCESSIBLE CURB RAMP NOTES PROVIDED UNDER "ACCESSIBLE CURB RAMP – TYPE 'A' DETAIL ON THIS SHEET ARE APPLICABLE.

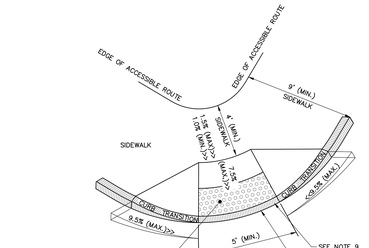
ACCESSIBLE CURB RAMP (ACR) – TYPE 'E'
N.T.S.



NOTE:

1. YIELD ARROW A SHALL BE USED FOR TRAVEL LANES UNDER TWELVE (12) FEET. YIELD ARROW B SHALL BE USED FOR TRAVEL LANES TWELVE (12) FEET OR GREATER

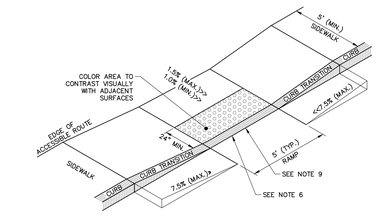
CROSSWALK PAVEMENT MARKINGS
N.T.S.



NOTE:

1. ACCESSIBLE CURB RAMP NOTES PROVIDED UNDER "ACCESSIBLE CURB RAMP – TYPE 'A' DETAIL ON THIS SHEET ARE APPLICABLE.

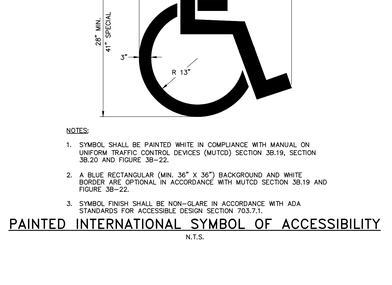
ACCESSIBLE CURB RAMP (ACR) – TYPE 'F'
N.T.S.



NOTE:

1. ACCESSIBLE CURB RAMP NOTES PROVIDED UNDER "ACCESSIBLE CURB RAMP – TYPE 'A' DETAIL ON THIS SHEET ARE APPLICABLE.

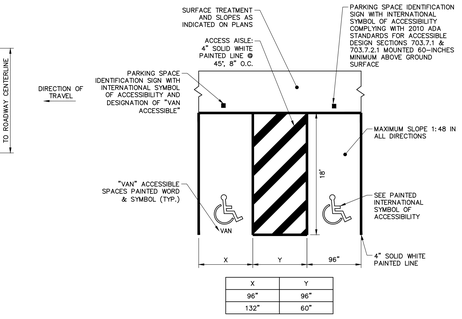
ACCESSIBLE CURB RAMP (ACR) – TYPE 'H'
N.T.S.



NOTES:

1. SYMBOL SHALL BE PAINTED WHITE IN COMPLIANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) SECTION 3B.19, SECTION 3B.20 AND FIGURE 3B-22.
2. A BLUE RECTANGULAR (MIN. 36" X 36") BACKGROUND AND WHITE BORDER ARE OPTIONAL IN ACCORDANCE WITH MUTCD SECTION 3B.19 AND FIGURE 3B-22.
3. SYMBOL FINISH SHALL BE NON-GLARE IN ACCORDANCE WITH ADA STANDARDS FOR ACCESSIBLE DESIGN SECTION 703.7.1.

PAINTED INTERNATIONAL SYMBOL OF ACCESSIBILITY
N.T.S.



X	Y
96"	96"
132"	60"

ACCESSIBLE PARKING STALL LAYOUT
N.T.S.

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

Woodard & Curran

LAND-USE PERMIT SET

NOT FOR CONSTRUCTION

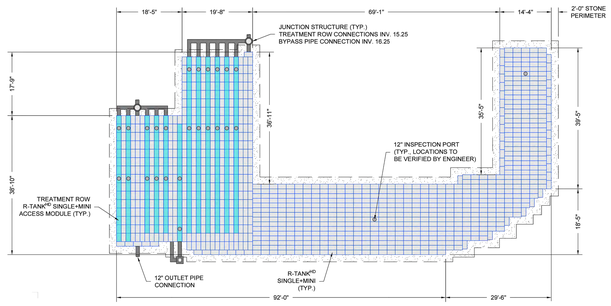
Number	Revision	Date

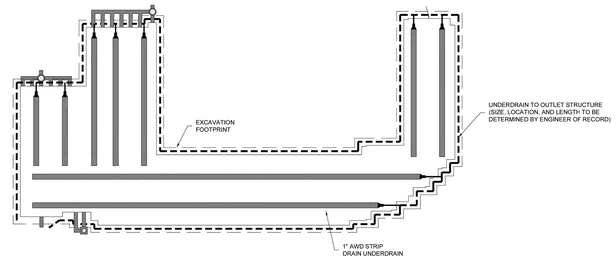
STATE OF MAINE
AMY N. LEBEL
17065
LICENSED
PROFESSIONAL ENGINEER
Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 MARCH 2024
Scale	AS NOTED

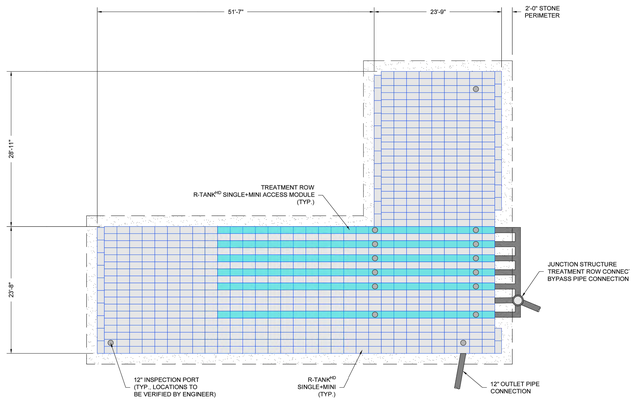
Drawing Title
CIVIL DETAILS - 4

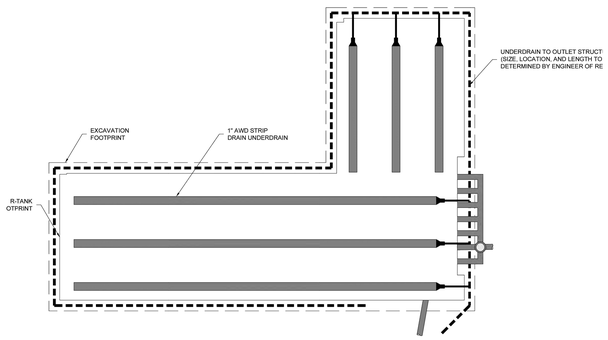
D-404



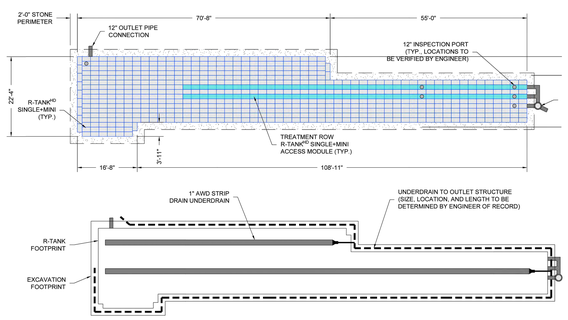


SAND FILTER 3





SAND FILTER 1



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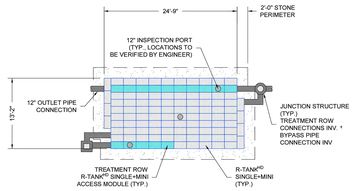

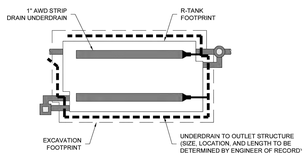

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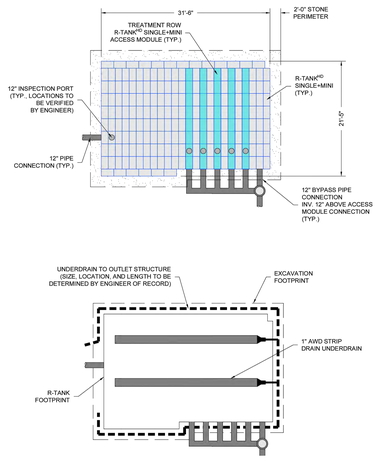

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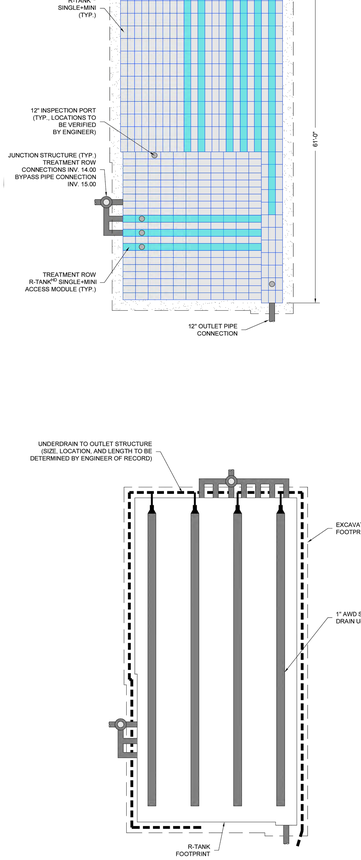

SAND FILTER 5

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

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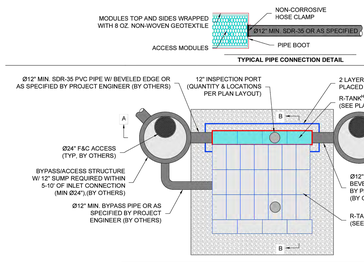
CIVIL DETAILS - 5

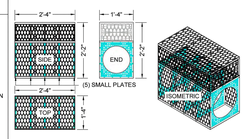
D-405



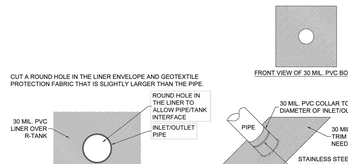
NOTE:
IF PIPE CONNECTING TO TREATMENT ROW IS LARGER THAN Ø12" SDR-35, IT SHALL BE ABUTTED FLUSH TO END PLATE AND SEALED WITH A PIPE BOOT.

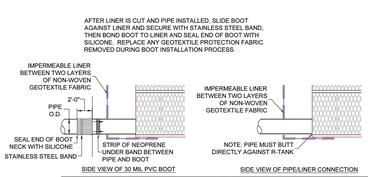
TYPICAL PIPE CONNECTION DETAIL

R-TANK^HD TREATMENT ROW WITH PRECAST INLET/ACCESS STRUCTURE

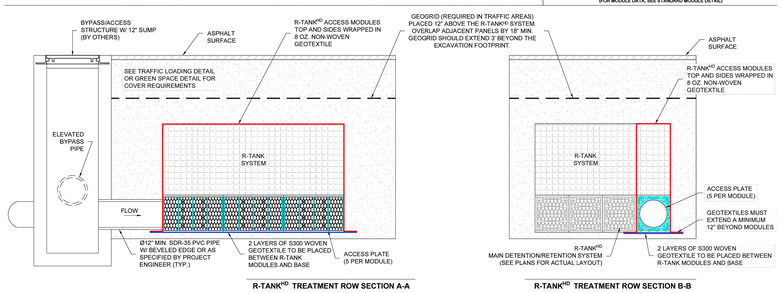


SINGLE + MINI R-TANK^HD - ACCESS MODULE DETAIL
(FOR MODULE DATA, SEE STANDARD MODULE DETAIL)





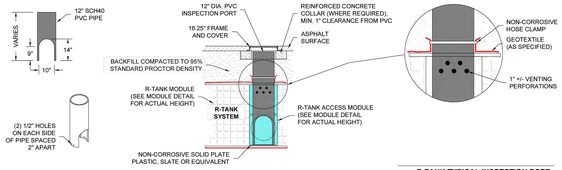
R-TANK TYPICAL EXCAVATION INLET/OUTLET W/ 30 MIL PVC PIPE BOOT DETAIL



R-TANK^HD TREATMENT ROW SECTION A-A

R-TANK^HD TREATMENT ROW SECTION B-B

NOTES
1. THE INSPECTION PORT IS USED IN THE ACCESS 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 AS NEEDED.
3. R-TANK^FC, R-TANK^FD, R-TANK^FT AND R-TANK^HD MAY BE USED IN TRAFFIC APPLICATIONS.
4. SEE TRAFFIC LOADING DETAIL FOR MINIMUM & MAXIMUM COVER REQUIREMENTS.
5. IF INSPECTION PORT IS LOCATED IN A NON-TRAFFIC AREA, A PLASTIC CAP CAN BE USED IN LIEU OF A FRAME AND COVER WITH CONCRETE COLLAR.



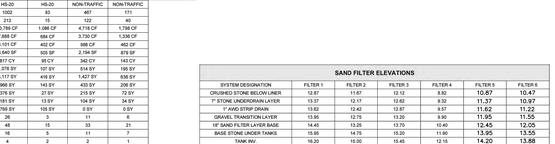
R-TANK TYPICAL INSPECTION PORT



MODULE DATA

GEOMETRY:	**LOAD RATING:**
LENGTH = 28.15 IN. (715 MM)	33.4 PSI. (MODULE ONLY)
WIDTH = 15.75 IN. (400 MM)	HS20/HS25 - SEE SPEC FOR
HEIGHT = 25.98 IN. (660 MM)	COVER REQUIREMENTS
TANK VOLUME = 6.67 CF	**MATERIAL:**
STORAGE VOLUME = 6.33 CF	100% RECYCLED POLYPROPYLENE
VOID INTERNAL VOLUME: 95%	**SMALL PLATES REQUIRED:**
VOID SURFACE AREA: 90%	5/SEGMENT, 10/MODULE

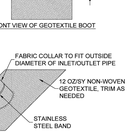
SINGLE + MINI R-TANK^HD - MODULE DETAIL



R-TANK^HD & HS-20 LOADS - SECTION VIEW

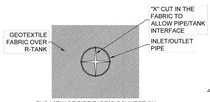
NOTES:
1. FOR COMPLETE MODULE DATA, SEE APPROPRIATE R-TANK^HD MODULE SHEET.
2. INSTALLATIONS PER THIS DETAIL MEET GUIDELINES OF HL-93 LOADING PER THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, CUSTOMARY U.S. UNITS, 7TH EDITION, 2014 WITH 2015 AND 2016 INTERIM REVISIONS.
3. PRE-TREATMENT STRUCTURES NOT SHOWN.
4. FOR INFILTRATION APPLICATIONS, GEOTEXTILE ENVELOPING R-TANK SHALL BE ACF M200 (PER SPEC SECTION 2.02A) AND BASE SHALL BE 4" MIN. UNCOMPACTED FREE DRAINING BACKFILL (SPEC SECTION 2.03A) TO PROVIDE A LEVEL BASE. SURFACE MUST BE SMOOTH, FREE OF LUMPS OR DEBRIS, AND EXTEND 2' BEYOND R-TANK^HD FOOTPRINT.

NOTE:
- PIPE BOOTS ARE AVAILABLE IN THE FOLLOWING STANDARD SIZES: 8" | 12" | 15" | 18" | 24"
- LARGER SPECIAL ORDER, CUSTOM SIZES ARE AVAILABLE.



FRONT VIEW OF GEOTEXTILE BOOT

CUT AN "X" IN THE FABRIC ENVELOPE THAT IS SLIGHTLY LARGER THAN THE PIPE. PULL THE FABRIC FLAPS AROUND THE PIPE, AND SEAL WITH A STAINLESS STEEL BAND.



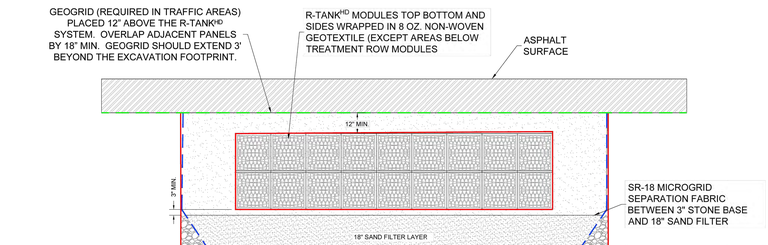
END VIEW OF PIPE/FABRIC CONNECTION

GEOTEXTILE BOOT

AFTER TANK WRAP IS SECURED TO PIPE, SLIDE BOOT AGAINST R-TANK AND SECURE WITH SECOND STAINLESS STEEL BAND, THEN ATTACH BOOT FLAP TO TANK ENVELOPE FABRIC WITH DUCT TAPE OR OTHER ADHESIVE.



R-TANK TYPICAL TANK INLET/OUTLET W/ GEOTEXTILE PIPE BOOT DETAIL



R-TANK QUANTITIES

SYSTEM DESIGNATION	FILTER 1	FILTER 2	FILTER 3	FILTER 4	FILTER 5	FILTER 6
R-TANK^HD MODULE TYPE	SINGLE+MINI	SINGLE+MINI	SINGLE+MINI	SINGLE+MINI	SINGLE+MINI	SINGLE+MINI
TRAFFIC LOAD	HS-20	NON-TRAFFIC	HS-20	HS-20	NON-TRAFFIC	NON-TRAFFIC
# OF SINGLE+MINI R-TANKS	659	570	1002	93	467	171
# OF SINGLE+MINI R-TANK ACCESS MODULES	132	82	212	15	122	40
TOTAL SYSTEM STORAGE	8,568 CF	5,447 CF	10,789 CF	1,086 CF	4,718 CF	1,798 CF
R-TANK STORAGE VOLUME	5,009 CF	4,129 CF	7,668 CF	494 CF	3,730 CF	1,356 CF
STONE STORAGE VOLUME (40% VOID RATIO)	1,979 CF	1,318 CF	3,101 CF	402 CF	988 CF	482 CF
STONE BED FOOTPRINT	2,993 SF	2,821 SF	4,840 SF	503 SF	2,194 SF	879 SF
TOTAL BACKFILL QUANTITY	525 CY	421 CY	817 CY	95 CY	340 CY	143 CY
5080 NON-WOVEN GEOTEXTILE TANK WRAP	694 SY	595 SY	1,078 SY	107 SY	514 SY	195 SY
5080 NON-WOVEN GEOTEXTILE EXCAVATION WRAP	1,981 SY	1,819 SY	3,117 SY	418 SY	1,427 SY	638 SY
30 MIL. PVC LINER	608 SY	516?	986 SY	143 SY	433 SY	206 SY
8 OZ. NON-WOVEN GEOTEXTILE TREAT. ROW WRAP	228 SY	140 SY	378 SY	27 SY	215 SY	72 SY
S300 WOVEN GEOTEXTILE TREAT. ROW BASE FABRIC	113 SY	70 SY	181 SY	13 SY	104 SY	34 SY
ACF BX-12 GEOGRID	491 SY	0 SY	789 SY	108 SY	0 SY	0 SY
12" INSPECTION PORTS	15	9	26	3	11	6
GEOTEXTILE PIPE BOOTS (12")	24	21	48	15	33	21
30 MIL. PVC PIPE BOOTS (12")	8	7	16	5	11	7
STORMRING CPS (12")	2	2	4	2	2	1
NOTE: STONE QUANTITY INCLUDES 12" OF COVER AND 7' OF BASE.						
NOTE: GEOTEXTILE / LINER QUANTITIES INCLUDE A 15% WASTE FACTOR.						
NOTE: TOTAL BACKFILL QUANTITY INCLUDES ALL AGGREGATE & SAND REQUIRED FOR R-TANK SYSTEM AND SAND FILTER LAYERS						
SEE SHEETS 3 - 14 FOR DETAILS AND ADDITIONAL INFORMATION						

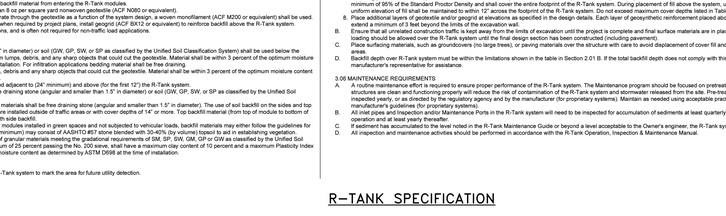
SAND FILTER ELEVATIONS

SYSTEM DESIGNATION	FILTER 1	FILTER 2	FILTER 3	FILTER 4	FILTER 5	FILTER 6
CRUSHED STONE BELOW LINER	12.87	11.67	12.12	8.82	10.87	10.47
7" STONE UNDERDRAIN LAYER	13.37	12.17	12.62	9.32	11.37	10.97
7" AWD STRIP DRAIN	13.62	12.42	12.87	9.57	11.62	11.22
GRAVEL TRANSITION LAYER	13.83	12.75	13.20	9.90	11.95	11.55
18" SAND FILTER LAYER BASE	14.45	13.25	13.70	10.40	12.45	12.05
BASE STONE UNDER TANKS	15.95	14.75	15.20	11.90	13.95	13.55
TANK INV.	16.20	15.00	15.45	12.15	14.20	13.88
TOP OF TANK	18.37	17.17	17.62	14.32	16.37	15.97
GEOGRID / TOP OF STONE	18.37	17.67	18.62	15.32	16.87	16.97
MIN. ALLOW. FINAL GRADE	20.04	18.17	19.29	15.99	17.37	17.64
MAX. ALLOW. FINAL GRADE	25.38	24.18	24.61	21.31	23.36	22.96



DUMP TRUCK DETAIL (SEE NOTE 3)

NOTES:
1. FOLLOWING PLACEMENT OF SIDE BACKFILL, A UNIFORM 12" LIFT OF THE FREELY DRAINING MATERIAL (SPEC SECTION 2.03 B2) SHALL BE PLACED OVER THE R-TANK AND LIGHTLY COMPACTED USING A WALK-BEHIND TRENCH ROLLER. ALTERNATELY, A ROLLER (MAXIMUM GROSS VEHICLE WEIGHT OF 6 TONS) MAY BE USED. ROLLER MUST REMAIN IN STATIC MODE UNTIL A MINIMUM OF 24" OF COVER HAS BEEN PLACED OVER THE MODULES. SHEEP FOOT ROLLERS SHOULD NOT BE USED. **SPEC SECTION 3.05 A5**
2. ONLY LOW PRESSURE TIRE OR TRACK VEHICLES (LESS THAN 7 PSI AND OPERATING WEIGHT OF LESS THAN 20,000 LBS) SHALL BE OPERATED OVER THE R-TANK SYSTEM DURING CONSTRUCTION. **SPEC SECTION 3.05 A5**
3. DUMP TRUCKS AND PANS SHALL NOT BE OPERATED WITHIN THE R-TANK SYSTEM AT ANY TIME. WHERE NECESSARY, THE HEAVY EQUIPMENT SHOULD UNLOAD IN AN AREA ADJACENT TO THE R-TANK SYSTEM AND THE MATERIAL SHOULD BE MOVED OVER THE SYSTEM WITH TRACKED EQUIPMENT. **SPEC SECTION 3.05 A5**
4. ENSURE THAT ALL UNRELATED CONSTRUCTION TRAFFIC IS KEPT AWAY FROM THE LIMITS OF EXCAVATION UNTIL THE PROJECT IS COMPLETE AND FINAL SURFACE MATERIALS ARE IN PLACE. NO NON-INSTALLATION RELATED LOADING SHOULD BE ALLOWED OVER THE R-TANK SYSTEM UNTIL THE FINAL DESIGN SECTION HAS BEEN CONSTRUCTED (INCLUDING PAVEMENT). **SPEC SECTION 3.05 B**
5. SEE R-TANK INSTALLATION GUIDE OR CONTACT YOUR LOCAL FERGUSON REPRESENTATIVE FOR ADDITIONAL INFORMATION.



NOTE: COVER BACKFILL MATERIAL MAY BE EITHER STONE OR SAND (SPEC SECTION 2.03 B1) OR A BLEND OF AASHTO #57 STONE WITH 30-40% (BY VOLUME) TOPSOIL TO AID IN ESTABLISHING VEGETATION (SPEC SECTION 2.03 B2).

CONSTRUCTION EQUIPMENT COVER DETAIL - GREEN SPACE

R-TANK SPECIFICATION

PART 1 - GENERAL
1.01 RELATED DOCUMENTS
A. Drawings, technical specification and general provisions of the Contract as modified herein apply to this section.

1.02 DESCRIPTION OF WORK INCLUDED
A. Provide excavation and base preparation per geotechnical engineer's recommendations and/or as shown on the design drawings, to provide adequate support for project design loads and safety from excavation sidewall collapse. Excavations shall be in accordance with the owner's and OSHA requirements.
B. Provide and install R-TanksLD; R-TankHD; R-TankSD; or R-TankUD system (hereafter called R-Tank) and all related products including fill materials, geotextiles, geogrids, inlet and outlet pipe with connections per the manufacturer's installation guidelines provided in this section.
C. Provide and construct the cover of the R-Tank system including: stone backfill, structural fill cover, and pavement section as specified.
D. Protect R-Tank system from construction traffic after installation until completion of all construction activity in the installation area.

1.03 QUALITY CONTROL
A. All materials shall be manufactured in ISO certified facilities.
B. Installation Contractor shall provide demonstrable the following experience:
1. A minimum of three R-Tank or equivalent projects completed within 2 years; and,
2. A minimum of 25,000 cubic feet of storage volume completed within 2 years.
3. Contractor experience requirement may be waived if the manufacturer's representative provides on-site training and review during construction.
C. Installation Personnel: Perform work only by skilled workers with satisfactory record of performance on bulk earthworks, pipe, chamber, or pond/landfill construction projects of comparable size and quality.
D. Contractor must have manufacturer's representative available for site review if requested by Owner.

1.04 SUBMITTALS
A. Submit proposed R-Tank layout drawings. Drawings shall include typical section details as well as the required base elevation of stone and tanks, minimum cover requirements and tank configuration.
B. Submit manufacturer's product data, including compressive strength and unit weight.
C. Submit manufacturer's installation instructions.
D. Submit R-Tank sample for review. Reviewed and accepted samples will be returned to the Contractor.
E. Submit material certificates for geotextile, geogrid, base course and backfill materials.
F. Submit required experience and personnel requirements as specified in Section 1.03.
G. Any proposed equal alternative product substitution to this specification must be submitted for review and approved prior to bid opening. Review package should include third party reviewed performance data that meets or exceeds criteria in Table 2.01 B.

1.05 DELIVERY, STORAGE, AND HANDLING
A. Protect R-Tank and other materials from damage during delivery, and store UV sensitive materials under tarp to protect from sunlight when time from delivery to installation exceeds two weeks. Storage of materials shall be on smooth surfaces, free from dirt, mud and debris.
B. Handling is to be performed with equipment appropriate to the materials and site conditions, and may include hand, handcart, forklifts, extension lifts, etc.
C. Cold weather:
1. Care must be taken when handling plastics when air temperature is 40 degrees or below as plastic becomes brittle.
2. Do not use frozen materials or materials mixed or coated with ice or frost.
3. Do not build on frozen ground or wet, saturated or muddy subgrade.

1.06 PREINSTALLATION CONFERENCE.
A. Prior to the start of the installation, a preinstallation conference shall occur with the representatives from the design team, the general contractor, the excavation contractor, the R-Tank installation contractor, and the manufacturer's representative.

1.07 PROJECT CONDITIONS
A. Coordinate installation of the R-Tank system with other on-site activities to eliminate all non-installation related construction traffic over the completed R-Tank system. No loads heavier than the design loads shall be allowed over the system, and in no case shall loads higher than a standard AASHTO HS20 (or HS25, depending on design criteria) load be allowed on the system at any time.
B. Protect adjacent work from damage during R-Tank system installation.
C. All pre-treatment systems to remove debris and heavy sediments must be in place and functional prior to operation of the R-Tank system. Additional pretreatment measures may be needed if unit is operational during construction due to increased sediment loads.
D. Contractor is responsible for any damage to the system during construction.

PART 2 - PRODUCTS
2.01 R-TANK UNITS
A. R-Tank - Injection molded plastic tank plate assembled to form a 95% void modular structure of predesigned height (custom for each project).
B. R-Tank units shall meet the following Physical & Chemical Characteristics:

PROPERTY	DESCRIPTION	R-Tank^HD VALUE	R-Tank^FC VALUE	R-Tank^FT VALUE	R-Tank^FD VALUE
Void Area	Volume available for water storage	95%	95%	95%	95%
Surface Void Area	Percentage of exterior available for infiltration	40%	56%	40%	40%
Vertical Compressive Strength	ASTM D 2412 / ASTM F 2418	35.0 psi	33.4 psi	42.8 psi	134.2 psi
Lateral Compressive Strength	ASTM D 2412 / ASTM F 2418	20.0 psi	22.4 psi	24.4 psi	N/A
HS-20 Minimum Cover	Cover required to support HS-20 loads	N/A	12"	12"	12" (STONE BACKFILL)
HS-25 Minimum Cover	Cover required to support HS-25 loads	N/A	12"	12"	12" (STONE BACKFILL)
Maximum Cover	Maximum allowable cover depth	3 feet	< 5 feet	< 10 feet	3 feet
Unit Weight	Weight of plastic per cubic foot of tank	3.93 lbs/ cf	3.56 lbs/cf	3.96 lbs / cf	4.33 lbs / cf
Pipe Thickness	Thickness of load bearing sidewalls	0.16 inches	0.18 inches	0.16 inches	N/A
Service Temperature	Temperature range for use	-40 – 120° F	-40 – 120° F	-40 – 120° F	-40 – 120° F

C. Supplier: Ferguson Waterworks 2831 Cardwell Road Richmond, VA 23234 (T): 800-448-3636, (F): 804-743-7779 www.ferguson.com

2.02 GEOSYNTHETICS
A. Geotextile. A geotextile envelope is required to prevent backfill material from entering the R-Tank modules
1. Standard Application: The standard geotextile shall be an 8 oz per square yard nonwoven geotextile (ACF N060 or equivalent).
2. Infiltration Applications: When water must infiltrate/exfiltrate through the geotextile as a function of the system design, a woven monofilament (ACF M200 or equivalent) shall be used.
B. Geogrid. For installations subject to traffic loads and/or when required by project plans, install geogrid (ACF BX12 or equivalent) to reinforce backfill above the R-Tank system. Geogrid is not always required for H-20 (and lower) installations, and is often not required for non-traffic load applications.

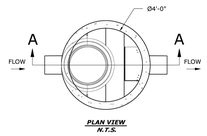
2.03 BACKFILL & COVER MATERIALS
A. Bedding Materials: Stone (angular and smaller than 1.5" in diameter) or soil (GW, GP, SW, or SP as classified by the Unified Soil Classification System) shall be used below the R-Tank system (3" minimum). Material must be free from lumps, debris, and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation. For infiltration applications bedding material shall be free draining.
B. Side and Top Backfill: Material must be free from lumps, debris and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation.
1. Traffic Applications - Free draining material shall be used adjacent to (24" minimum) and above (for the first 12") the R-Tank system.
a. For HS, and SO modules, backfill materials shall be free draining stone (angular and smaller than 1.5" in diameter) or soil (GW, GP, SW, or SP as classified by the Unified Soil Classification System).
b. For UD modules with less than 14" of top cover, backfill materials shall be free draining stone (angular and smaller than 1.5" in diameter). The use of soil backfill on the sides and top of the UD module is not permitted unless the modules are installed outside of traffic areas or with cover depths of 14' or more. Top backfill material (from top of module to bottom of pavement base or 12" maximum) must be consistent with side backfill.
2. Non-Traffic / Green Space Applications - For all R-Tank modules installed in green spaces and not subjected to vehicular loads, backfill materials may either follow the guidelines for Traffic Applications above, or the top backfill layer (12" minimum) may consist of AASHTO #57 stone blended with 30-40% (by volume) topsoil to aid in establishing vegetation.
C. Additional Cover Materials: Structural Fill shall consist of granular materials meeting the gradational requirements of SM, SP, SW, GM, GP or GW as classified by the Unified Soil Classification System. Structural fill shall have a maximum of 25 percent passing the No. 200 sieve, shall have a maximum clay content of 10 percent and a maximum Plasticity Index of 4. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation.

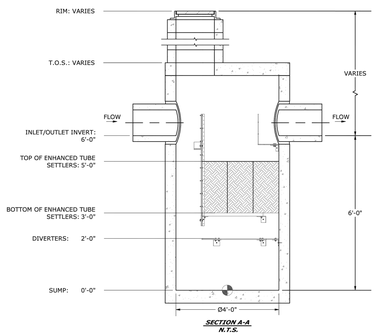
2.04 OTHER MATERIALS
A. Utility Marker: Install metallic tape at corners of R-Tank system to mark the area for future utility detection.

PART 3 - EXECUTION
3.01 ASSEMBLY OF R-TANK UNITS
A. Assembly of modules shall be performed in accordance with the R-Tank Installation Manual, Section 2.

3.02 LAYOUT AND EXCAVATION
A. Installer shall stake out, excavate, and prepare the subgrade area to the required plan grades and dimensions, ensuring that the excavation is at least 2 feet greater than R-Tank dimensions in each direction allowing for installation of geotextile filter fabric, R-Tank modules, and free draining backfill materials.
B. All excavations must be prepared with OSHA approved excavated sides and sufficient working space.
C. Protect partially completed installation against damage from other construction traffic by establishing a perimeter with high visibility construction tape, fencing, barricades, or other means until construction is complete.
D. Base of the excavation shall be uniform, level, and free of lumps or debris and soft or yielding subgrade areas. A minimum 2,000 pounds per square foot bearing capacity is required.
1. Standard Applications: Compact subgrade to a minimum of 95% of Standard Proctor (ASTM D698) density or as required by the Owner's engineer.
2. Infiltration Applications: Subgrade shall be prepared in accordance with the contract documents. Compaction of subgrade should not be performed in infiltration applications.
E. Unsuitable Soils or Conditions: All questions about the base of the excavation shall be directed to the owner's engineer, who will approve the subgrade conditions prior to placement of stone. The owner's engineer shall determine the required bearing capacity of the R-Tank subgrade; however in no case shall a bearing capacity of less than 2,000 pounds per square foot be provided.
1. If unsuitable soils are encountered at the subgrade, or if the subgrade is pumping or appears excessively soft, repair the area in accordance with contract documents and/or as directed by the owner's engineer.
2. If indications of the water table are observed during excavation, the engineer shall be contacted to provide recommendations.
3. Do not start installation of the R-Tank system until unsatisfactory subgrade conditions are corrected and the subgrade conditions are accepted by the owner's engineer.

3.03 PREPARATION OF BASE
A. Place a thin layer (3" unless otherwise specified) of bedding material (Section 2.03 A), over the subgrade to establish a level working platform for the R-Tank modules. Level to within ½" (+/- ¼")





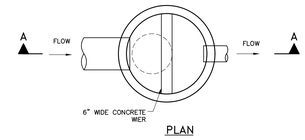
GENERAL NOTES:

1. CONCRETE COMPONENTS SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C478.
2. CONTRACTOR TO INSTALL THE STRUCTURE IN ACCORDANCE WITH ASTM C1821.
3. CONTRACTOR TO PROVIDE ALL LABOR AND EQUIPMENT REQUIRED TO OFFLOAD AND INSTALL UNIT.
4. CONTRACTOR TO PROVIDE AND INSTALL ALL PIPES, FRAMES, COVERS, HATCHES, AND RISERS UNLESS SPECIFIED OTHERWISE.
5. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS.

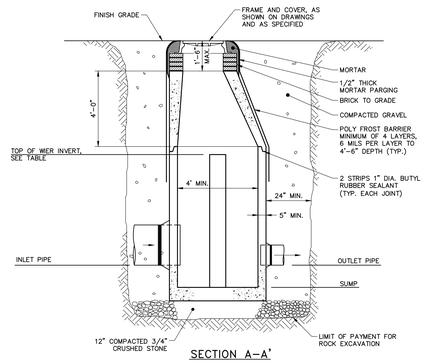
NOTE: PROVIDE STORMSETTLER BY STORMTRAP OR APPROVED EQUAL.

HYDRODYNAMIC SEPARATOR

N.T.S.



PLAN



SECTION A–A'

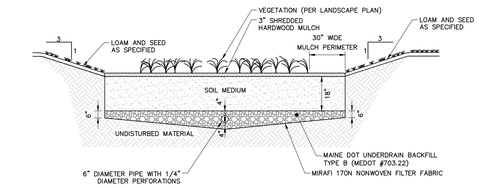
NOTE:
1. SEE STRUCTURE TABLE FOR DIMENSIONS.

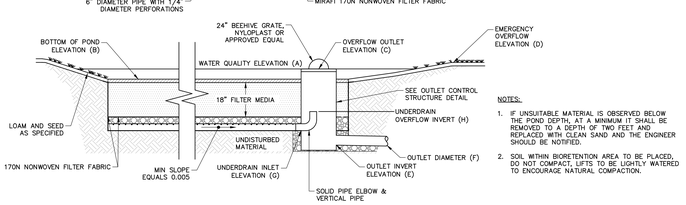
DIVERSION MANHOLE DETAIL

N.T.S.

DIVERSION STRUCTURE DIMENSIONS/ ELEVATIONS	
LOCATION	TOP OF WEIR B (ELEV)
DMH2 (DIV.)	17.50
DMH6 (DIV.)	17.90
DMH12 (DIV.)	16.90
DMH15 (DIV.)	16.20
DMH24 (DIV.)	14.50
DMH32 (DIV.)	16.20
DMH33 (DIV.)	13.60
DMH37 (DIV.)	15.70

BIORETENTION BASIN DIMENSIONS/ ELEVATION (FEET)								
LOCATION	A (ELEV)	B (ELEV)	C (ELEV)	D (ELEV)	E (ELEV)	F (ELEV)	G (ELEV)	H (ELEV)
BIORETENTION BASIN 1	19.50	19.00	19.50	21.25	15.00	1.00	16.34	17.84
BIORETENTION BASIN 2	14.50	14.00	14.50	14.80	10.50	1.00	11.34	12.84
BIORETENTION BASIN 3	13.00	12.50	13.00	13.80	9.00	1.00	9.84	11.34





NOTES:

1. IF UNSUITABLE MATERIAL IS OBSERVED BELOW THE POND DEPTH, AT A MINIMUM IT SHALL BE REMOVED TO A DEPTH OF TWO FEET AND REPLACED WITH CLEAN SAND AND THE ENGINEER SHOULD BE NOTIFIED.
2. SOIL WITHIN BIORETENTION AREA TO BE PLACED, DO NOT COMPACT, LIFTS TO BE LIGHTLY WATERED TO ENCOURAGE NATURAL COMPACTION.

BIORETENTION BASIN

N.T.S.

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

Woodard & Curran

LAND-USE PERMIT SET

NOT FOR CONSTRUCTION

Number	Revision	Date

STATE OF MAINE
AMY N. LEBEL
17065
LICENSED
PROFESSIONAL ENGINEER

Stamp

Job #	2202
Project	THE ROUX INSTITUTE AT NORTHEASTERN UNIVERSITY
Drawn By	BCM
Designed By	ANL
Checked	DLC
Date	27 MARCH 2024
Scale	AS NOTED

Drawing Title
CIVIL DETAILS - 7

D-407



PHASE 1 SITE PLAN

NORTHEASTERN IDEALS Portland, ME

0' 40'

STIMSON



PHASE 1 SITE PLAN

NORTHEASTERN IDEALS Portland, ME

STIMSON

PARKING STRUCTURE

BEAN BUILDING

LEARNING, RESEARCH, AND COLLABORATION BUILDING

MATCH L2.01
MATCH L2.00

MATCH L2.00
MATCH L8.00

LIMIT OF WORK

NOTE: CONTRACTOR TO REMOVE CONSTRUCTION FILL DEBRIS FROM BEACH, INCLUDING BRICK, TILE, GRANITE BLOCK, AND OTHER MATERIALS IDENTIFIED BY OWNER AND DESIGN TEAM

8 QTY 9

8 QTY 6

PATHWAY AT PROPERTY LINE PLAN
1"=20'

MATERIALS LEGEND

PAVEMENT

P1	ASPHALT PAVING - VEHICULAR	1 L6.00
P2	CONCRETE PAVEMENT-PEDESTRIAN	2 L6.00
P3	CONCRETE PAVEMENT-VEHICULAR	3 L6.00
P4	GRANITE PAVERS 01 - VEHICULAR	5 L6.00
P5	GRANITE PAVERS 02-VEHICULAR	5 L6.00
P6	PRECAST CONCRETE PAVERS - VEHICULAR	7 L6.00
P7	PRECAST CONCRETE PAVERS - PEDESTRIAN	7 L6.00
P8	GRANITE PAVERS 01- PEDESTRIAN	6 L6.00
P9	GRANITE COBBLESTONE PAVERS - PERMEABLE	8 L6.00
P10	GRANITE COBBLESTONE PAVERS- VEHICULAR	7 L6.00
P11	DECOMPOSED GRANITE PAVEMENT	13 L6.00

CURBS AND EDGES

C1	GRANITE CURB - 6" RAISED	9 L6.00
C2	GRANITE CURB - FLUSH	11 L6.00
C3	GRANITE CURB - TRANSITION	15 L6.00
C4	GRANITE CURB - MOUNTABLE	12 L6.00
E1	STEEL EDGING	14 L6.00
E2	RECLAIMED RAIL TRACK	
TD	TRENCH DRAIN	3 L6.02
SI	STEEL CURB INLET (QUANTITY: 5)	21 L6.00
RR	SHORELINE PROTECTION, SEE MARINE ENGINEER DRAWINGS	

WALLS AND STAIRS

W1	ARCHITECTURAL CONCRETE RETAINING WALL	1 L6.01
W2	CONCRETE RETAINING WALL WITH STONE VENEER	2 L6.01
W3	CONCRETE FOUNDATION WALL AT WOOD DECK	16 L6.00
W4	BOARD FORMED CONCRETE RETAINING WALL	1 L6.01
W5	MONOLITHIC STONE RETAINING WALL ON DENSE GRADED CRUSHED STONE BASE	19 L6.00
S1	MONOLITHIC GRANITE STAIRS ON CONCRETE FOUNDATION	17 L6.00

SITE FURNISHINGS

WB	MONOLITHIC GRANITE BENCH WITH WOOD INSET	1 L6.02
WW	WOOD BENCH AT CONCRETE RETAINING WALL	20 L6.00
CB	PRE-CAST CONCRETE BRIDGE - PEDESTRIAN	2 L6.02
WD	WOOD DECK AT TERRACED LANDSCAPE	16 L6.00
HR	STAINLESS STEEL HANDRAIL WITH INTEGRATED LIGHTING	18 L6.00
CR	STAINLESS STEEL CURB RAIL	2 L6.02
TG	VEHICULAR TIMBER GUARDRAIL	3 L6.01
DW	DETECTABLE WARNING STRIP AT ADA CURB RAMP	15 L6.00
VG	VEHICULAR GATE (QUANTITY: 1)	7 L6.01
BR	BIKE RACK (QUANTITY: 95)	5 L6.01
B	REMOVABLE BOLLARD (QUANTITY: 17)	4 L6.01
F	WOODEN SLAT FENCE AT PLAYGROUND	3 L6.03

MATERIALS NOTES:

1. MAKE TRANSITIONS BETWEEN CHANGES IN PAVING SMOOTH AND GRADUAL WITH NO SHARP OR ABRUPT CHANGES UNLESS OTHERWISE SHOWN.
2. REFER TO LANDSCAPE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

IDEALS
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Roux Campus

The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

LAND-USE PERMIT SET

Number	Revision	Date

REGISTERED LANDSCAPE ARCHITECT
STEPHEN C. STIMSON
No. 3916
STATE OF MAINE

Stamp

Job #	2202		
Project	THE ROUX INSTITUTE		
Drawn By	ZH SK JC MS	Checked	STIMSON
Date	27 OCTOBER 2023		
Scale	1" = 20'		

Drawing Title

Materials Plan

L3.00

MATERIALS LEGEND

PAVEMENT

P1	ASPHALT PAVING - VEHICULAR	1 / 16.00
P2	CONCRETE PAVEMENT-PEDESTRIAN	2 / 16.00
P3	CONCRETE PAVEMENT-VEHICULAR	3 / 16.00
P4	GRANITE PAVERS 01 - VEHICULAR	5 / 16.00
P5	GRANITE PAVERS 02-VEHICULAR	5 / 16.00
P6	PRECAST CONCRETE PAVERS - VEHICULAR	7 / 16.00
P7	PRECAST CONCRETE PAVERS - PEDESTRIAN	7 / 16.00
P8	GRANITE PAVERS 01- PEDESTRIAN	6 / 16.00
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P11	DECOMPOSED GRANITE PAVEMENT	13 / 16.00

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WALLS AND STAIRS

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TG	VEHICULAR TIMBER GUARDRAIL	3 / 16.01
DW	DETECTABLE WARNING STRIP AT ADA CURB RAMP	15 / 16.00
VG	VEHICULAR GATE (QUANTITY: 1)	7 / 16.01
BR	BIKE RACK (QUANTITY: 95)	5 / 16.01
B	REMOVABLE BOLLARD (QUANTITY: 17)	4 / 16.01
F	WOODEN SLAT FENCE AT PLAYGROUND	3 / 16.03

MATERIALS NOTES:

1. MAKE TRANSITIONS BETWEEN CHANGES IN PAVING SMOOTH AND GRADUAL WITH NO SHARP OR ABRUPT CHANGES UNLESS OTHERWISE SHOWN.
2. REFER TO LANDSCAPE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.



IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

LAND-USE PERMIT SET

Number	Revision	Date

STEPHEN C. STIMSON No. 3916 — LICENSED LANDSCAPE ARCHITECT — STATE OF MAINE

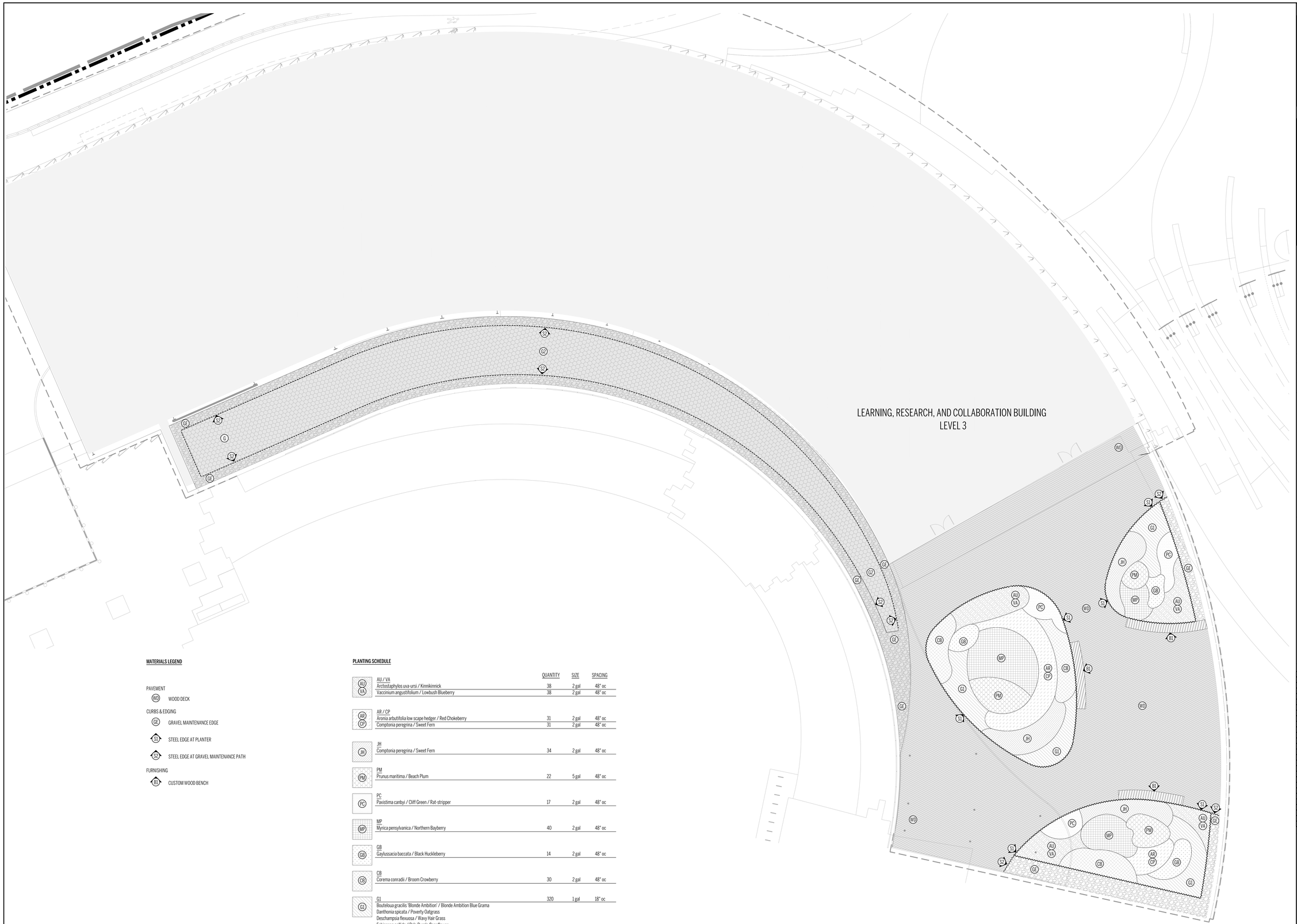
Stamp

Job #	2202		
Project	THE ROUX INSTITUTE		
Drawn By	ZH SK JC MS	Checked	STIMSON
Date	27 OCTOBER 2023		
Scale	1" = 20'		

Drawing Title

Materials Plan

L3.01



MATERIALS LEGEND

PAVEMENT

WD WOOD DECK

CURBS & EDGING

GE GRAVEL MAINTENANCE EDGE

S1 STEEL EDGE AT PLANTER

S2 STEEL EDGE AT GRAVEL MAINTENANCE PATH

FURNISHING

B1 CUSTOM WOOD BENCH

PLANTING SCHEDULE

		QUANTITY	SIZE	SPACING
AU / VA	AU / VA			
	Arctostaphylos uva-ursi / Kinnikinnick	38	2 gal	48" oc
	Vaccinium angustifolium / Lowbush Blueberry	38	2 gal	48" oc
AR / CP	AR / CP			
	Aronia arbutifolia low scape hedger / Red Chokeberry	31	2 gal	48" oc
	Comptonia peregrina / Sweet Fern	31	2 gal	48" oc
JH	JH			
	Comptonia peregrina / Sweet Fern	34	2 gal	48" oc
PM	PM			
	Prunus maritima / Beach Plum	22	5 gal	48" oc
PC	PC			
	Paxistima canbyi / Cliff Green / Rat-stripper	17	2 gal	48" oc
MP	MP			
	Myrica pensylvanica / Northern Bayberry	40	2 gal	48" oc
GB	GB			
	Gaylussacia baccata / Black Huckleberry	14	2 gal	48" oc
CB	CB			
	Corema conradii / Broom Crowberry	30	2 gal	48" oc
G1	G1	320	1 gal	18" oc
	Bouteloua gracilis 'Blonde Ambition' / Blonde Ambition Blue Grama			
	Danthonia spicata / Poverty Oatgrass			
	Deschampsia flexuosa / Wavy Hair Grass			
	Echinacea pallida / Pale Purple Coneflower			
	Festuca rubra / Red Fescue			
	Ionactis linariifolia / Flaxleaf Aster			
	Juncus trifidus / Highland Rush			
	Schizachyrium scoparium / Little Bluestem			
	Sibbaldiopsis tridentata / Three-leaved Cinquefoil			
	Solidago caesia / Wreath Goldenrod			
	Symphyotrichum novae-angliae / New England Aster			
G2	G2	3,628 SF	LiveRoof Maxx (8" soil depth)	
	Bouteloua gracilis 'Blonde Ambition' / Blonde Ambition Blue Grama			
	Danthonia spicata / Poverty Oatgrass			
	Deschampsia flexuosa / Wavy Hair Grass			
	Echinacea pallida / Pale Purple Coneflower			
	Festuca rubra / Red Fescue			
	Ionactis linariifolia / Flaxleaf Aster			
	Juncus trifidus / Highland Rush			
	Schizachyrium scoparium / Little Bluestem			
	Sibbaldiopsis tridentata / Three-leaved Cinquefoil			
	Solidago caesia / Wreath Goldenrod			
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Stamp

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Date	27 OCTOBER 2023
Scale	1" = 10'

Drawing Title
Roof Plan

L3.10

PARKING STRUCTURE

MATCH L4.01
MATCH L4.00

MATCH L4.01
MATCH L4.00

MATCH L4.01
MATCH L4.00

PATHWAY AT PROPERTY LINE PLAN
1"=20'

LEARNING, RESEARCH, AND COLLABORATION BUILDING

BEAN BUILDING

5,838 sf M1
3,767 sf M2
764 sf M1
606 sf M1
2,402 sf M2
4,904 sf M2
4,528 sf M1
521 sf M1
992 sf M1
992 sf M1
1,495 sf M2
504 sf M1

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LAND-USE PERMIT SET

Number	Revision	Date

REGISTERED LANDSCAPE ARCHITECT
STEPHEN C. STIMSON
No. 3916
STATE OF MAINE

Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	ZH SK JC MS
Checked	STIMSON
Date	27 OCTOBER 2023
Scale	1" = 20'

Drawing Title
Planting Plan

L4.00



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LAND-USE PERMIT SET

Number	Revision	Date

LICENSED LANDSCAPE ARCHITECT
STEPHEN C. STIMSON
No. 3916
STATE OF MAINE

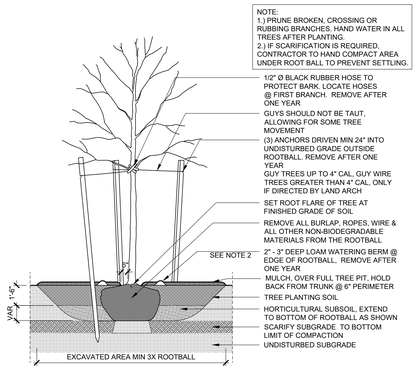
Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	ZH SK JC MS
Checked	STIMSON
Date	27 OCTOBER 2023
Scale	1" = 20'

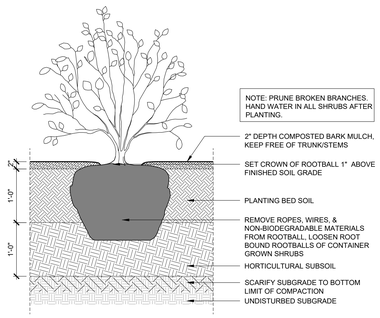
Drawing Title

Planting Plan

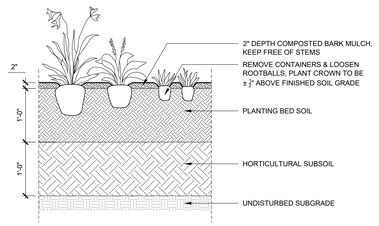
L4.01



3 **TREE PLANTING**
1/4" = 1'-0"



2 **SHRUB PLANTING**
1" = 1'-0"



1 **PERENNIAL AND GROUNDCOVER PLANTING**
1" = 1'-0"

MEADOW SITE PREPARATION AND SEEDING NOTES

1) Materials Delivery, Storage, and Handling:
   a) General:
      i) Deliver materials only after preparation for on-site seeding of the meadow seeding area and adjacent areas has been completed and accepted.
      ii) Prohibit materials only after preparation for on-site seeding of the meadow seeding area and adjacent areas has been completed and accepted.
      iii) Prohibit storage of any equipment or materials on the areas to be seeded once the final mowing prior to seeding has occurred.
   b) Seed:
      i) Seed shall be stored at temperatures between 40- and 60-degrees F and with a relative humidity of between 25-60%.
      ii) Protect seed from drying out, becoming moist or wet, overheating, and /or from contamination during delivery. Seed that has become wet or moldy shall not be accepted.
      iii) Transport temperature shall not exceed 105 F at any time. If transit from cold storage to sowing is greater than 10 days, seed must be kept under storage temperatures and relative humidity described above.

2) Installation Seasons:
   a) Work only within seasonal limitations for proper seeding. These are optimal times for rapid establishment of optimal ground cover, and suppression of weeds.
   b) Permanent meadow seeding should be sown between *July 1 – Aug. 15, Nov. 15 – Dec. 15*
   c) If sowing is being done between August 1 and August 31, use 25% more seed per unit area and expect more weed management.
   d) If seeding occurs between October 1 and January 31st, it must be done when there is no snow on the ground.

3) Site Preparation Acceptance:
   a) Prior to seeding, the site must be inspected by the Landscape Architect, Meadow Specialist, and Meadow Installer to ensure that weed control is acceptable, seed bed is in the appropriate condition for seeding, and the site has been correctly delineated.
   b) If it is determined that conditions are not acceptable for seeding, the unacceptable areas should be mitigated and re-inspected by the Landscape Architect and Meadow Consultant prior to seeding.

4) Seeding and Meadow Acceptance:
   a) If the site preparation process starts and seeding does not occur within proper seeding windows, the Owner shall sow and manage a cover crop to protect and stabilize meadow areas until the next occurring seeding window.
   b) The Landscape Architect and Meadow Consultant must inspect site prior to seed installation and provide site preparation acceptance.
   c) Seeding shall consist of soil preparation, seeding, weeding, and otherwise providing all labor and materials necessary to secure the establishment of acceptable vegetative layer.
   d) After seeding, the site must be inspected by the Landscape Architect and the Meadow Consultant to ensure that seeding has been completed as per construction drawings.
   e) Meadow acceptance occurs a minimum of 120 days from completion of final meadow seeding phase and between May and September
   f) Meadow acceptance shall be an acceptable stand of meadow which is defined to mean a uniform coverage with well established, close stands of plants that meet the following criteria: a minimum of 8 thriving desirable plants per square foot (excluding nurse crop), no bare or dead spots over 36" maximum in any dimension, no more than 10% of the meadow is bare, and free from disease, and detrimental insect infestation.
   g) Begin management practice immediately after seeding is complete for a given area.

5) Meadow Seed:
   a) See Plant Lists in the Drawings for Meadow Seed Mixes
   b) Provide fresh, new crop seed that is 98% Pure Live Seed (for tested species) or better. In no case shall weed seed content exceed 1% by weight. All seeds shall comply with Federal and State seed laws. Seed shall not be coated with herbicides and/or fungicides.
   c) Seed mixes shall be delivered in individual bags labeled by mix and then by seed size within each mix.
   d) Small Seed: 25,000 seeds per/oz or less. Individual seeds can be picked up by hand.
   e) Very Fine Seed: 25,000+ seeds/oz. Individual seeds are too small to be picked up by hand.
   f) Grain: Cover crop grain seed and large wildflower seed (¼-¼" in size)
   g) Fluffy Seed: Seed with fluffy, feathery seed coat

6) Seed Mix Suppliers:
   a) Ernst Conservation Seeds, Inc., 8884 Mercer Pike, Meadville PA 16335, Tel: 800-873-3321, http://www.ernstseed.com/.
   b) Prairie Moon Nursery, 32115 Prairie Lane, Winona, MN 55987. Tel: (886)417-8156, www.prairiemoon.com
   c) Roundstone Native Seed Company, 9764 Raider Hollow Rd, Upton, KY 42784, Tel: (270) 531-3034, https://roundstoneseed.com
   d) Equal approved by the Architect and Meadow Consultant.

7) Cover Crops
   a) Cover Crop shall be installed in areas disturbed during construction for soil stabilization prior to permanent meadow seed: May 1 – Oct. 1
   b) Cover crops should only be sown in areas with new soil that will not need Erosion Control Fabric, or to protect and stabilize soils outside of the seeding window.

8) Seeding Materials and Equipment:
   a) Use flake pine shavings as a seed mix broadcasting agent.
   b) Do not use fertilizer.
   c) Mechanized equipment for finished grading shall be skid-steer (full-size or mini) or tractor with Harley Rake/Power Rake attachment.
   d) Hand seeding techniques shall be used to sow meadow seed in all areas.
   e) Hydroseeding is not allowed.
   f) No mulch shall be used in seeded meadow areas.

9) Site Preparation: GENERAL
   a) Pre-installation examination and sequencing are required: Before beginning any establishment phase (site preparation, seeding, planting), the Contractor shall examine previous work, related work, and conditions under which this work is to be performed and notify the Landscape Architect in writing of all deficiencies and conditions detrimental to the proper completion of this work. Beginning work means Contractor accepts substrates, previous work, and conditions.
   b) The Contractor shall not commence work associated with the installation of meadows until all work in the work areas is complete and accepted by the Landscape Architect.
   c) The following shall be completed prior to the commencement of seeding:
      i) Fine gradings and the removal of all debris and weeds.
      ii) Utilities have been installed and accepted.
      iii) All trees, shrubs, and perennials have been planted.
      iv) Permanent and temporary irrigation for trees, shrubs, and perennials located within or adjacent to meadow seeding areas has been installed and accepted.
      v) Stormwater management areas, swales, and drainage areas shall remain dry during seeding and meadow establishment. The contractor and owner shall coordinate site drainage during meadow establishment so to bypass seeded areas from stormwater surge.
   d) Prior to seeding, stake areas with pin flags that identify seed type for each area.
   e) Do not proceed with seeding until the extent and distribution of seeding/planting zones has been accepted by the Landscape Architect.
   f) Meadow seed mix installation should not occur until any vegetation management procedures, such as weed control or other vegetation removals, in meadow areas have been completed and accepted.
   g) The Landscape Architect and Meadow Consultant must inspect site prior to seed installation and provide site preparation acceptance.
   h) A properly compacted seedbed should not allow a shoe to sink more than ½" when walking on the seedbed.
   i) Meadow areas shall have at least one full growing season of weed control prior to seeding and must be inspected by the Meadow Consultant prior to seeding.
   j) Cover crops should only be sown in areas with new soil that will not need Erosion Control Fabric, or to protect and stabilize soils outside of the seeding window.

10) Site Preparation for Dormant Seeding shall occur in the following sequence:
   a) Early May: Site Visit #1 -Site visit with the Contractor and Meadow Consultant to finalize the spray plan (timing and products) and to delineate all meadow extents where soil disturbance will not occur. Once meadow has been delineated all mowing within this area should cease.
   b) Mid-June: Spray #1 - Broadcast spray area with Glyphosate, and other products as specified in Early May visit. At least two weeks without mowing should have occurred prior to the first spray.
   c) Mid-July: Mow #1 - Mow any areas where growth is higher than 6" to a height of 4". Wait at least 3 weeks from the date of the first spray prior to mowing.
   d) Early August: Site Visit #2 -Site visit with Contractor and Meadow Specialist to finalize spray plan (timing and products).
   e) Late August: Spray #2 - Broadcast spray area with Glyphosate, and other products as specified in early August visit.
   f) Mid-September: Mow #2 - Mow any areas where growth is higher than 6" to a height of 4". Wait at least 3 weeks from date of spray prior to mowing.
   g) Early October: -Site Visit #3 -Site visit with Contractor and Meadow Specialist to finalize spray plan (timing and products).
   h) Late October: Spray #3 - Broadcast spray area with Glyphosate, and other products as specified in early October visit.

11) Site Preparation for Summer Seeding shall occur in the following sequence:
   a) Early August: Site Visit #1 - Site visit with contractor and meadow expert to finalize spray plan (timing and products) and to delineate all meadow extents where soil disturbance will not occur. Once meadow has been delineated all mowing within this area should cease.
   b) Late August: Spray #1 - Broadcast spray area with Glyphosate, and other products as specified in early August visit.
   c) Mid-September: Mow #1 - Mow any areas where growth is higher than 6" to a height of 4". Wait at least 3 weeks from date of spray prior to mowing.
   d) Early October: Site Visit #2 -Site visit with Contractor and Meadow Specialist to finalize spray plan (timing and products).
   e) Late October: Spray #2 - Broadcast spray area with Glyphosate, and other products as specified in early October visit.
   f) Early May (the following year): Site Visit #3 -Site visit with contractor and meadow expert to finalize spray plan (timing and products).
   g) Mid-June: Spray #3 - Broadcast spray area with Glyphosate, and other products as specified in early May visit. At least two weeks should without mowing should have occurred prior to the first spray.
   h) Early-July: Mow #2 - Mow any areas where growth is higher than 6" to a height of 4".

12) Permanent Meadow Mix Seeding Installation shall occur in the following sequence:
   a) Install meadow seed mix during the timeline established by this document.
   b) Seeding shall consist of soil preparation, seeding, weeding, and otherwise providing all labor and materials necessary to secure the establishment of acceptable vegetative layer.
   c) Prior to seeding and planting verify meadow area is prepared and ready for vegetation installation and that water is available for seed mixing.
   d) Scarify soil to depth of approximately ½" using appropriate equipment. Repeat as needed to create a seedbed with approximately 50% of the soil exposed. No tilling should be performed, as this will increase weed presence due to the release of dormant weed seeds below the soil surface.
   e) Segregate the seeds according to mix and then by seed size. For the hand broadcast method, "Fluffy," "Small," and "Grain" seed can be combined (henceforth referred to collectively as "Large" seed). "Very Fine" seed (seed which cannot be picked up individually by hand) must always remain separate.
   f) Bulk up "Large" seed by mixing with an inert bulking material such as sawdust, sand, or flake pine shavings. Seed and bulking material can be mixed on tarps spread on the ground. Slightly dampening the bulking material will help the seed to be evenly distributed throughout the bulked material. Use enough bulking material to allow seed to be evenly distributed over the entire project area.
   g) Seeding must happen within 24 hours of mixing seed with wet material.
   h) Only seed that can be installed in a single workday should be mixed at any given time.
   i) Hand sow large seed that has been bulked up with wet inert material. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
   j) Run over area with dethatcher or power rake to lightly cover large seed no to exceed ¾" depth. Use a hand rake if the area is not accessible with machinery.
   k) Bulk up the "Very fine" seed in the manner described above and broadcast evenly over the prepared surface. Do not incorporate into the soil as these species need light to germinate and will not do so if buried in the soil.
   l) Any stabilization fabrics shall only be placed after permanent seed has been sown and accepted.
   m) Begin management practice immediately after seeding is complete for a given area.

13) Management procedures and activities during meadow establishment shall observe the following guidelines:
   a) In the first growing season seeded vegetation should not be allowed to exceed 12" in height.
   b) As vegetation approaches 12" in the meadow, mow or cut all growth to approximately 4-6" height (approximately once per month during the growing season).
   c) Use flail or rotary-style equipment that will chop dead growth.
   d) Sickle bar type mowers that cut at the base of vegetation and drop plant material intact should not be used as the intact cut plant material can inhibit seedling development.
   e) In locations inaccessible to a mower (wet areas, steep slopes, etc.), string trim vegetation to the specified height.
   f) Areas with live plants should not be mown. Areas should be weeded by hand or with small mechanical equipment where appropriate. Work in these areas to be completed by meadow installer.
   g) Do not irrigate seeded meadow areas unless required for planted vegetation, in which case irrigation should be directed at planted vegetation and not on seeded areas, to the extent possible.
   h) Mow entire meadow one time to height of 4" in March/early April with a flail mower. Do not mow lower than 4". String trim areas inaccessible to a mower.
   i) Spot treat weeds as required (min. 1 spray, max. 3 sprays).
   j) Maintenance contractors shall not blow leaves or other debris in the direction of seeded meadows or within seeded meadows.
   k) Conduct a minimum of two (2) annual meadow checks by a meadow expert.

14) If a meadow is damaged, remove damaged materials if necessary. Restore areas to original grades and reestablish meadow as originally installed following the establishment train time frames.
   a) Request Landscape Architect approval prior to beginning repairs.
   b) If a meadow exhibits unsatisfactory growth, perform soil testing for chemical properties, compaction, and infiltration rates.
   c) Adhere to Landscape Architect's recommended remediation.
   d) Remediation may include additional weed control or re-seeding.

15) Reseeding shall be performed at the request of the Landscape Architect.
   a) Reseeding shall be required if meadow establishment/performance is poor, dead spots are apparent, or other unsuitable conditions are present.
   b) Work shall be performed according to the installation calendar above. Work outside this window is not permitted.
   c) Cut or trim vegetation to maximum of 2" prior to reseeding. Remove cut vegetation from the meadow.
   d) When reseeding, follow the seeding process outlined above.
   e) When reseeding areas where erosion control is in place, apply seed mixture starting at the top of the slope and over the extent of erosion control material to be reseeded. Hand rake to move seed through the erosion control matting towards soil contact.t. Hands sow sand/seed mixture down into the areas between the cut vegetation.

16) Warranty and Management
   a) Begin management practice immediately after seeding is complete for a given area.
   b) Meadow acceptance occurs a minimum of 120 days from completion of final meadow seeding phase and between May and September
   c) The Contractor shall warranty and maintain the meadow for two years following meadow acceptance.

PLANT SCHEDULE

TREES	BOTANICAL / COMMON NAME	CONT	SIZE	QTY	REMARKS
AB	Abies balsamea / Balsam Fir	B & B	5'-6" H	3	
AC	Acer saccharinum / Silver Maple	B & B	2"-2.5" Cal	3	
AR	Acer rubrum / Red Maple	B & B	2"-2.5" Cal	3	
AS	Acer saccharum 'Green Mountain' / Sugar Maple	B & B	2"-2.5" Cal	11	
AF	Acer x freemanii 'Jeffersred' / Autumn Blaze® Freeman Maple	B & B	2"-2.5" Cal	41	
AA	Amelanchier arborea 'Autumn Brilliance' / Autumn Brilliance Downy Serviceberry	B & B	3'-4" H	41	
BA	Betula alleghaniensis / Yellow Birch	B & B	1.5"-2" Cal	24	
BP1	Betula papyrifera / Paper Birch	B & B	1.5"-2" Cal	22	
BP	Betula papyrifera / Paper Birch	B & B	1.5"-2" Cal	10	
BG	Betula populifolia / Gray Birch	B & B	6 - 8' H	4	
CD	Calocedrus decurrens / Incense Cedar	B & B	5'-6" H	5	
CO	Carya ovata / Shagbark Hickory	B & B	2"-2.5" Cal	3	
CC	Cercis canadensis / Eastern Redbud	B & B	3'-4" H	10	
CT	Chamaecyparis thyoides / Atlantic White Cypress	B & B	5'-6" H	4	
CV	Crataegus viridis 'Winter King' / Winter King Hawthorn	B & B	5'-6" H	15	
GK	Gymnocladus dioica / Kentucky Coffeetree	B & B	2"-2.5" Cal	3	
JC	Juglans cinerea / Butternut	B & B	2"-2.5" Cal	6	
LL	Larix laricina / Tamarack	B & B	8'-10" H	13	
LL2	Larix laricina / Tamarack	B & B	5'-6" H	3	
MV	Magnolia virginiana / Sweetbay Magnolia	B & B	4'-5" H	4	
MS	Malus sargentii / Sargent Crabapple	B & B	4'-5" H	2	
NS	Nyssa sylvatica / Tupelo	B & B	1.5"-2" Cal	21	
PG	Picea glauca / White Spruce	B & B	6'-7" H	12	
PR	Pinus rigida / Pitch Pine	B & B	3'-4" H	30	
PS	Pinus strobus / White Pine	B & B	6'-7" H	21	
PT	Populus tremuloides / Quaking Aspen	B & B	1.5"-2" Cal	38	
QA	Quercus alba / White Oak	B & B	1.5"-2" Cal	17	
QB	Quercus bicolor / Swamp White Oak	B & B	2"-2.5" Cal	4	
QC	Quercus coccinea / Scarlet Oak	B & B	2"-2.5" Cal	5	
QI	Quercus ilicifolia / Scrub Oak	B & B	2"-2.5" Cal	3	
QM	Quercus macrocarpa / Burr Oak	B & B	2"-2.5" Cal	1	
QR	Quercus rubra / Red Oak	B & B	2"-2.5" Cal	22	
SS	Sassafras albidum / Sassafras	5 Gal.	1"-1.5" Cal	7	
TO	Thuja occidentalis / American Arborvitae	B & B	6-7' H	9	
TG	Thuja standishii x plicata 'Green Giant' / Green Giant Arborvitae	B & B	5'-6" H	12	
TA	Tilia americana / American Linden	B & B	1.5"-2" Cal	2	

SHRUBS		AVG SIZE	SPACING	QTY	AREA
SH	Shrub (See SHRUBS below for ground plane species list)	2 GAL	48" OC	3,325	51,081 SF

PERENNIALS		AVG SIZE	SPACING	QTY	AREA
P	Perennials - container (See PERENNIALS below for ground plane species list)	1 QT	30" OC	4,396	26,256 SF
MP	Perennials - plug (See PERENNIALS below for ground plane species list)	2" Plug	18" o.c.	45,753	89,360 SF

LAWN		AREA
L	Lawn sod	41,368 SF

SEEDED AREAS		SIZE	SPACING	AREA	REMARKS
M3	Perimeter Meadow	SEED		17,307 sf	
M1	Upland Meadow	SEED		93,555 sf	
M2	Wet Meadow	SEED		18,214 sf	

NOTE: Tree caliper sizes listed are intended to depict the average size of all trees installed. Exact installed sizes may vary.

SPECIES LIST (GROUND PLANE)

SHRUBS

SHRUB PALETTE
Arctostaphylos uva-ursi / Kinnikinnick
Aronia arbutifolia / Red Chokeberry
Aronia arbutifolia low scape hedger / Red Chokeberry
Celphanthus occidentalis / Buttonbush
Clethra alnifolia / Mountain Sweet Pepperbush
Clethra alnifolia 'Hummingbird' / Hummingbird Summersweet
Comptonia peregrina / Sweet Fern
Fothergilla gardenii / Dwarf Fothergilla
Gaylussacia baccata / Black Huckleberry
Ilex glabra 'Shamrock' / Shamrock Inkberry Holly
Ilex verticillata / Winterberry
Ilex verticillata 'Red Sprite' / Red Sprite Winterberry
Juniperus horizontalis / Creeping Juniper
Kalmia angustifolia / Sheep Laurel
Myrica gale / Sweetgale
Perennial Plugs / Perennial Plugs
Perennial Plugs / Perennial Plugs
Prunus maritima / Beach Plum
Rhododendron viscosum / Swamp Azalea
Spiraea alba / Meadowsweet
Vaccinium corymbosum / Highbush Blueberry
Viburnum dentatum / Viburnum
Viburnum dentatum 'Christom' / Blue Muffin® Arrowwood Viburnum
Viburnum trilobum 'Compactum' / Compact American Cranberrybus
Viburnum x 'Burkwoodii' / Burkwood Viburnum

PERENNIALS

PERENNIALS
Achillea millefolium / Common Yarrow
Actaea racemosa / Black Snakeroot
Adiantum pedatum / Northern Maidenhair Fern
Ammophila breviligulata / American Beachgrass
Andropogon virginicus / Broomsedge Bluestem
Carex pennylvanica / Pennsylvania Sedge
Carex stricta / Tussock Sedge
Danthonia spicata / Poverty Oatgrass
Dennstaedtia punctilobula / Hay-scented Fern
Doellingeria umbellata / Flat-topped Aster
Echinacea purpurea / Coneflower
Elymus virginicus / Virginia Wild Rye
Festuca rubra / Red Fescue 305
Gaultheria procumbens / Wintergreen
Helenium autumnale / Sneezeweed
Iris versicolor / Blue Flag
Juncus greenei / Greene's Rush
Maianthemum canadense / Canada Mayflower
Osmundastrum cinnamomeum / Cinnamon Fern
Panicum virgatum / Switch Grass
Panicum virgatum 'Cape Breeze' / Cape Breeze Switch Grass
Penstemon hirsutus / Hairy Beardtongue
Polystichum acrostichoides / Christmas Fern
Schizachyrium scoparium / Little Bluestem
Solidago bicolor / White Goldenrod
Symphyotrichum ericoides / Heath Aster
Symphyotrichum novae-angliae / New England Aster
Symphyotrichum novi-belgii / New York Aster

IDEALS
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CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

LAND-USE PERMIT SET

Number	Revision	Date

REGISTERED LANDSCAPE ARCHITECT STEPHEN C. STIMSON No. 3916 STATE OF MAINE
Stamp

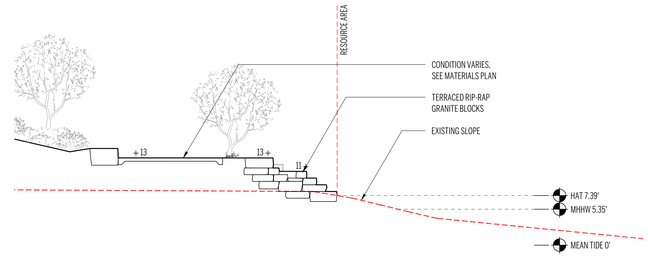
Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	ZH SK JC MS
Checked	STIMSON
Date	27 OCTOBER 2023
Scale	as noted

Drawing Title
Plant Schedules and Planting Details

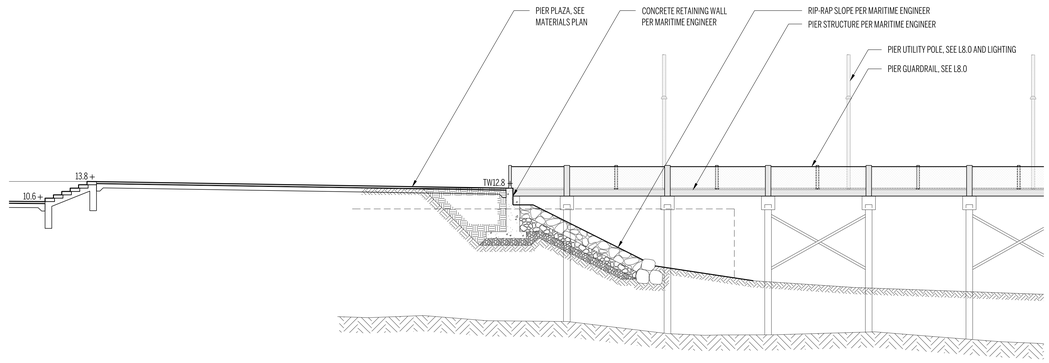
L4.02



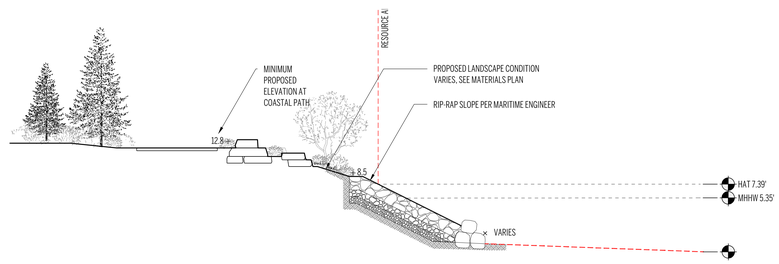
KEY PLAN
1"=100'



3 SECTION AT TERRACED RIP-RAP
1/8" = 1'-0"



2 SECTION AT PIER INTERFACE
1/8" = 1'-0"



1 TYPICAL SECTION AT SHORLINE
1/8" = 1'-0"

0 5' 10' 20' N

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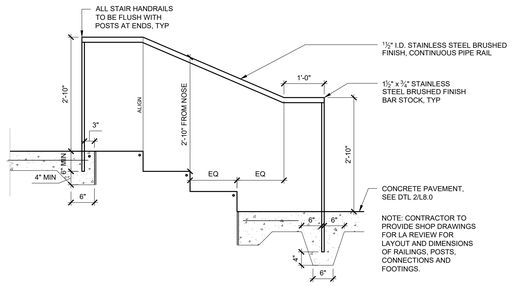
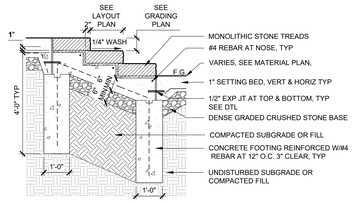
Drawing Title
--- Site Sections

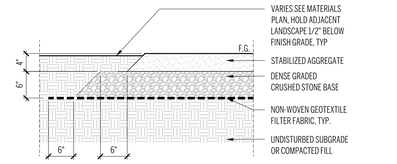
L5.00



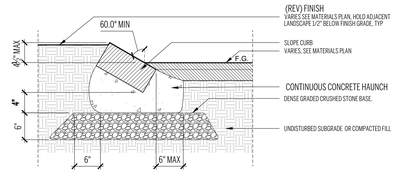
18 STAINLESS STEEL HANDRAIL WITH INTEGRATED LIGHTING
3/4" = 1'-0"



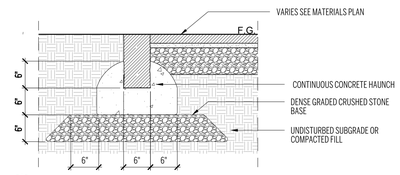
17 MONOLITHIC GRANITE STAIRS ON CONCRETE FOUNDATION
1/2" = 1'-0"



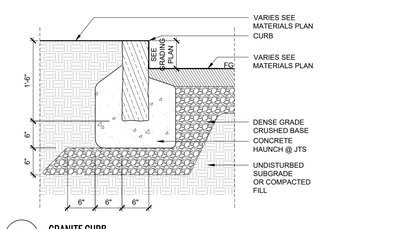
13 DECOMPOSED GRANITE PAVING
1" = 1'-0"



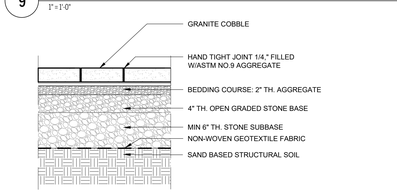
12 GRANITE CURB - MOUNTABLE
1" = 1'-0"



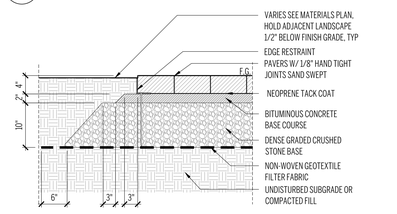
11 GRANITE CURB - FLUSH
1" = 1'-0"



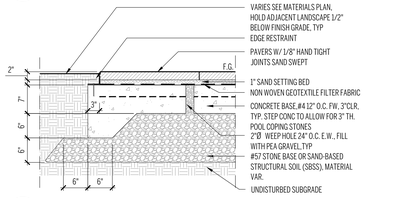
9 GRANITE CURB
1" = 1'-0"



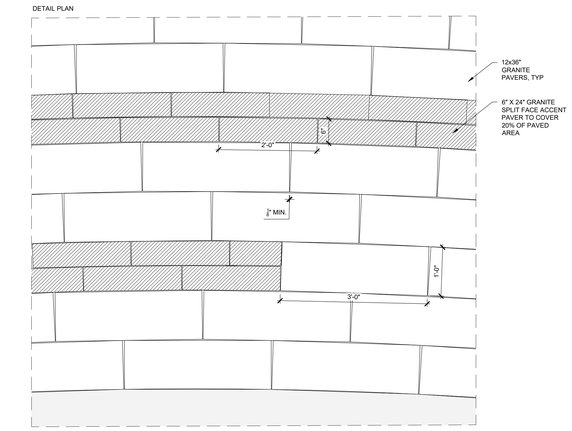
8 GRANITE COBBLE AT TREE PITS
1" = 1'-0"

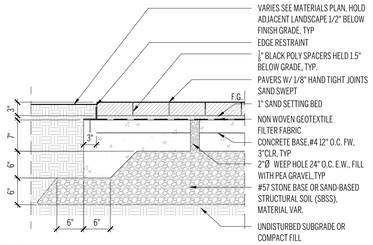


7 PRECAST CONCRETE PAVERS/COBBLESTONE
1" = 1'-0"

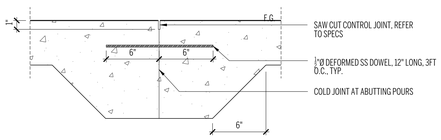


6 GRANITE PAVERS - PEDESTRIAN
1" = 1'-0"

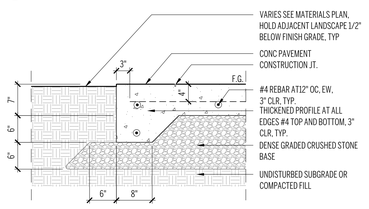




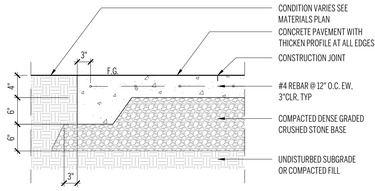
5 GRANITE PAVERS - VEHICULAR
1" = 1'-0"



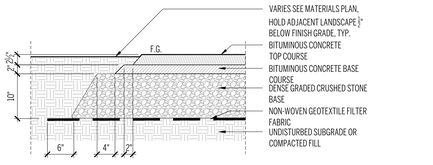
4 CONCRETE CONSTRUCTION JOINT
2" = 1'-0"



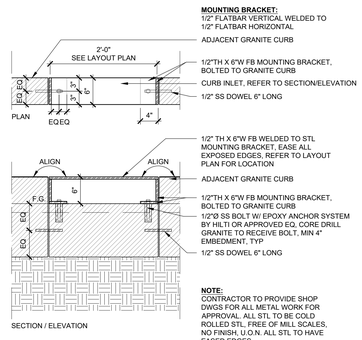
3 CONCRETE PAVEMENT - VEHICULAR
1" = 1'-0"



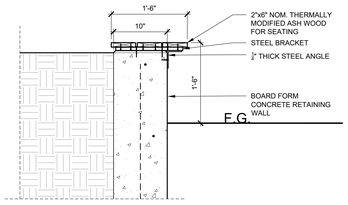
2 CONCRETE PAVEMENT - PEDESTRIAN
1" = 1'-0"



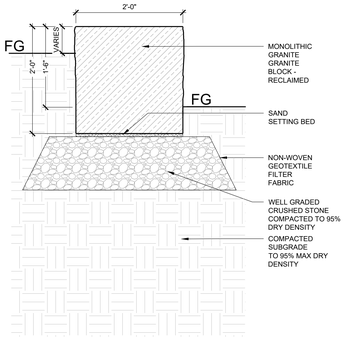
1 ASPHALT PAVING - VEHICULAR
1" = 1'-0"



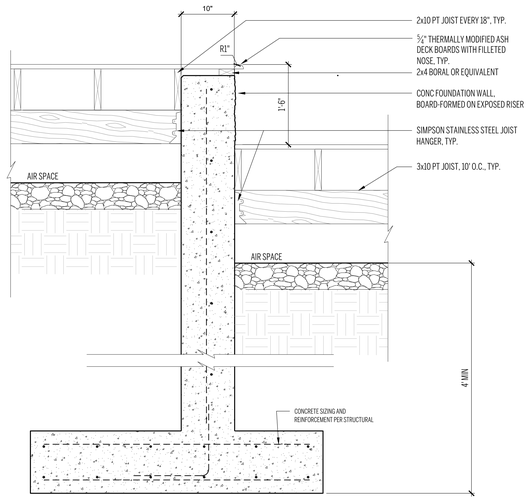
21 STEEL CURB INLET
1" = 1'-0"



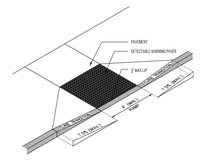
20 CONCRETE RETAINING WALL WITH WOOD CAP
NTS



19 MONOLITHIC STONE WALL ON DENSE GRADED CRUSHED STONE BASE
1" = 1'-0"

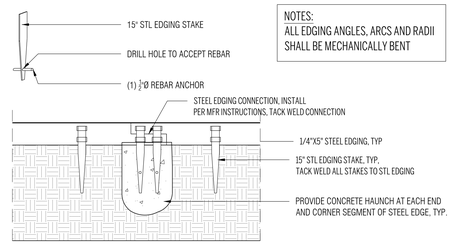


16 WOOD DECK AT TERRACED LANDSCAPE
NTS



1. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5 (1% min).
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE CURB RAMPS SHALL BE 7.5%.
4. A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. RAMP, CURB, AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
7. TYPICAL SIDEWALK SECTION FOR RAMP SECTION CONSTRUCTION.
8. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
9. ELIMINATE CURBING AT RAMP WHERE IT ABUTS ROADWAY, EXCEPT WHERE VERTICAL CURBING IS INDICATED ON THE DRAWINGS TO BE SET FLUSH.
10. DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES.
11. DETECTABLE WARNINGS SHALL BE INSTALLED PERPENDICULAR TO THE ACCESSIBLE ROUTE.

15 ADA RAMP
NTS



NOTES:
ALL EDGING ANGLES, ARCS AND RADII SHALL BE MECHANICALLY BENT

14 STEEL EDGING
1" = 1'-0"

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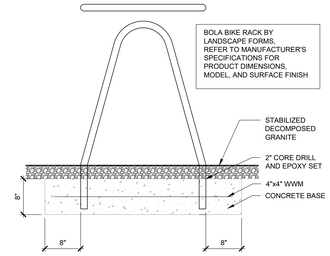
LAND-USE PERMIT SET

Number	Revision	Date

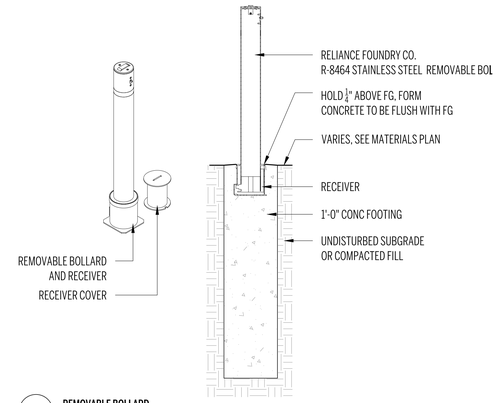
PROFESSIONAL LANDSCAPE ARCHITECT
STEPHEN C. STIMSON
No. 3916
STATE OF MAINE
Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	ZH SK JC MS
Checked	STIMSON
Date	27 OCTOBER 2023
Scale	AS NOTED
Drawing Title	--- Site Details

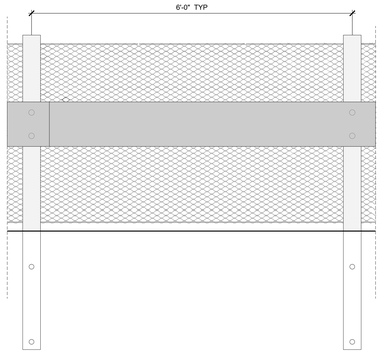
L6.00



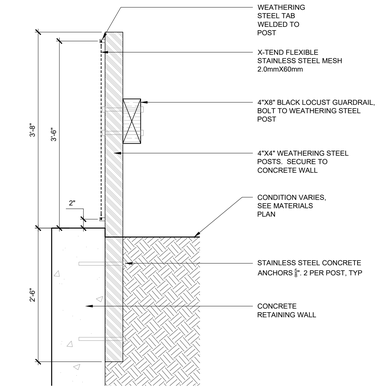
5 **BIKE RACK**
1" = 1'-0"



4 **REMOVABLE BOLLARD**
1" = 1'-0"

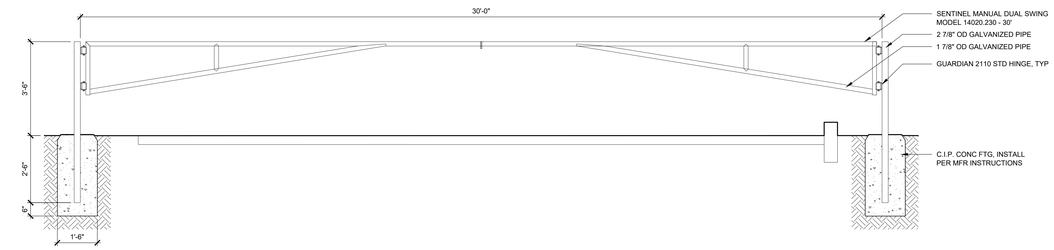


ELEVATION

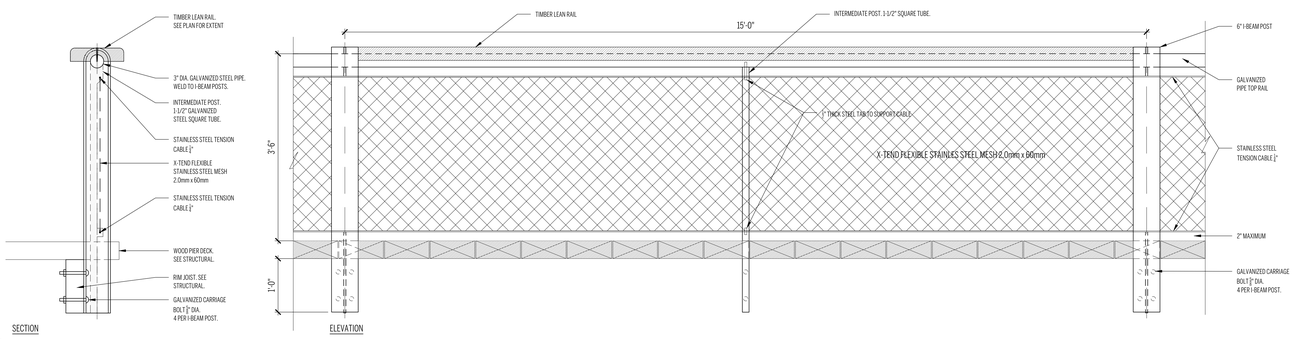


SECTION

3 **TIMBER GUARDRAIL**
1" = 1'-0"



7 **VEHICULAR GATE**
1/2" = 1'-0"

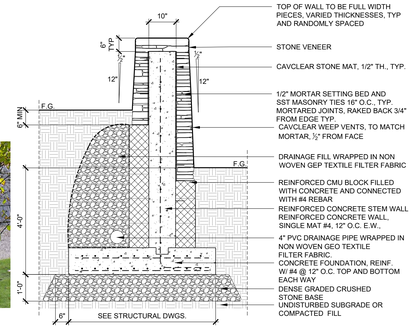


6 **PIER GUARDRAIL**
1" = 1'-0"



GRANITE VENEER MASONRY PRECEDENT

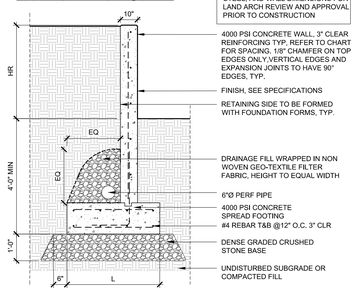
REINFORCING CHART		
HR	L	VERTICAL REINF.
8'-10"	7'-0"	#6@8" O.C.
6'-8"	6'-0"	#6@12" O.C.



2 **CONCRETE RETAINING WALL WITH STONE VENEER**
1/2" = 1'-0"

REINFORCING CHART		
HR	L	VERTICAL REINF.
8'-10"	7'-0"	#6@8" O.C.
6'-8"	6'-0"	#6@12" O.C.

NOTE: CONTRACTOR TO PROVIDE SHOP DRAWINGS SHOWING FORM DIMENSIONS, TIE HOLE LOCATIONS, STEEL, AND WALL DIMENSIONS FOR LAND ARCH REVIEW AND APPROVAL PRIOR TO CONSTRUCTION



1 **ARCHITECTURAL CONCRETE RETAINING WALL**
NTS

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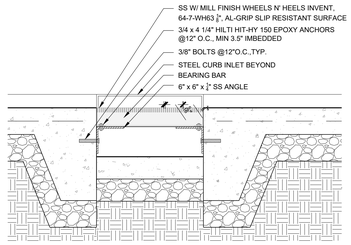
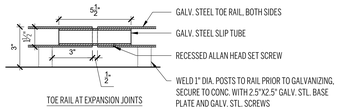


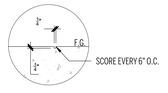
METAL GRATE BRIDGE PRECEDENT



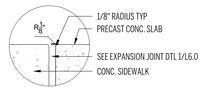
3 **METAL GRATE BRIDGE - PEDESTRIAN**
1" = 1'-0"



TOE RAIL AT EXPANSION JOINTS

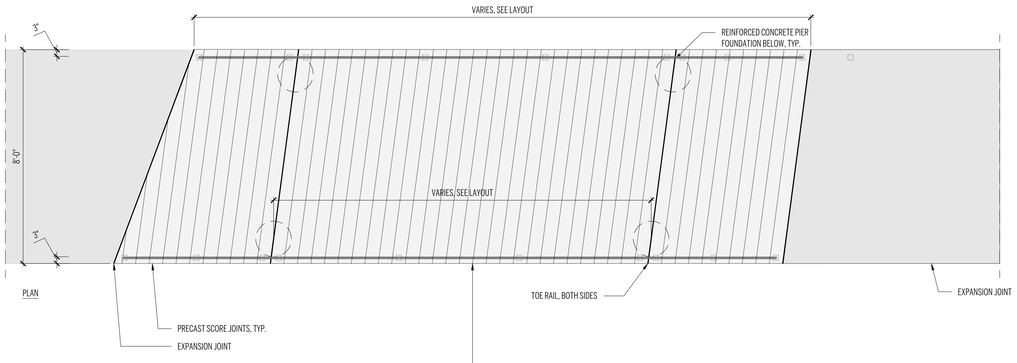


PRECAST SCORE JOINT



EXPANSION JOINT

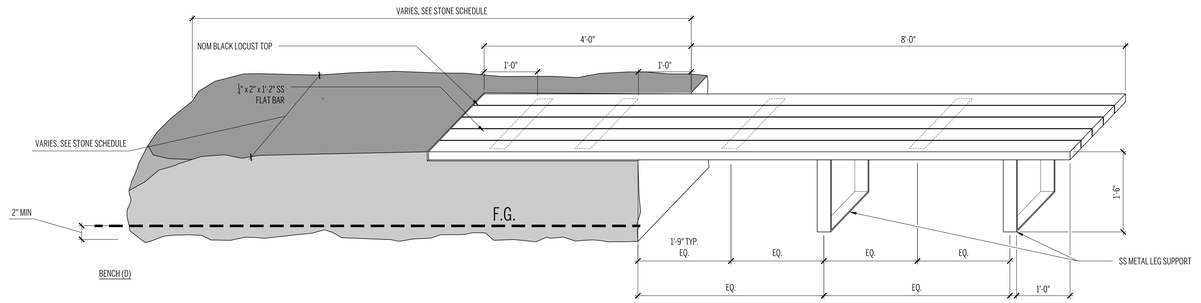
SECTION: HANDRAIL AT EXPANSION JOINTS TYP.
SCALE: 3"=1'-0"



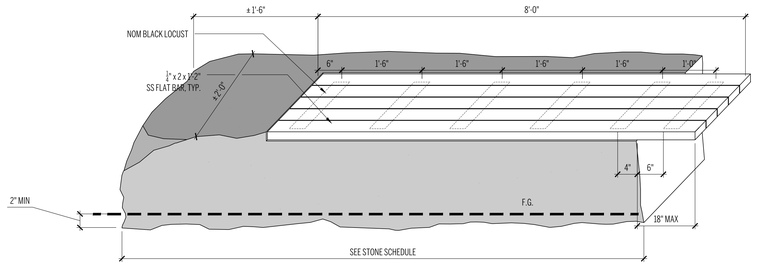
PLAN

SECTION

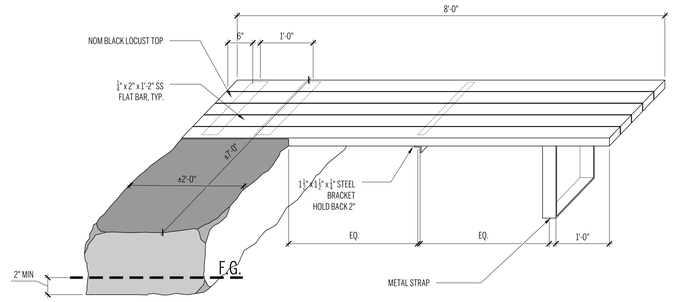
2 **CAST CONCRETE BRIDGE - PEDESTRIAN**
1/2" = 1'-0"



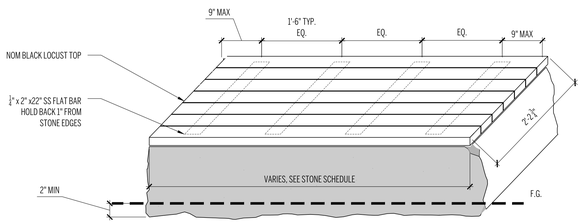
BENCH (D)



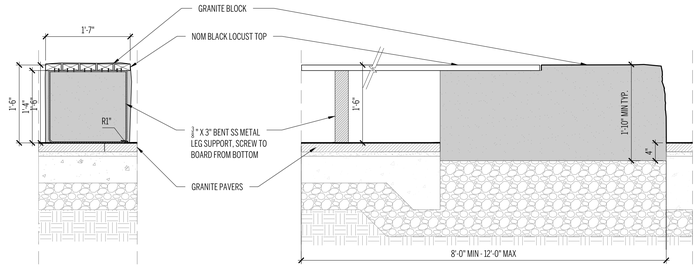
BENCH (C)

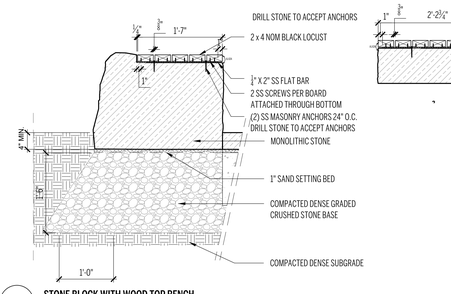


BENCH (B)

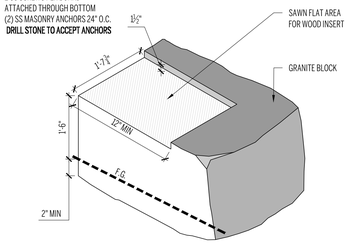


BENCH (A)









1 **STONE BLOCK WITH WOOD TOP BENCH**
1" = 1'-0"

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LAND-USE PERMIT SET

Number	Revision	Date

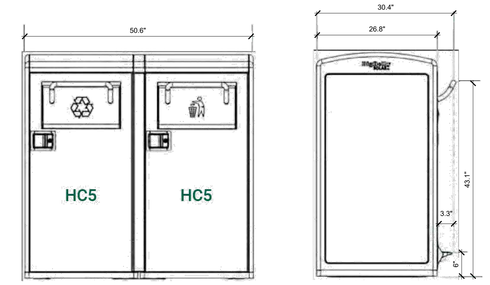
LICENSED LANDSCAPE ARCHITECT STEPHEN C. STIMSON No. 3916 STATE OF MAINE

Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	ZH SK JC MS Checked STIMSON
Date	27 OCTOBER 2023
Scale	AS NOTED

Drawing Title
--- Site Details

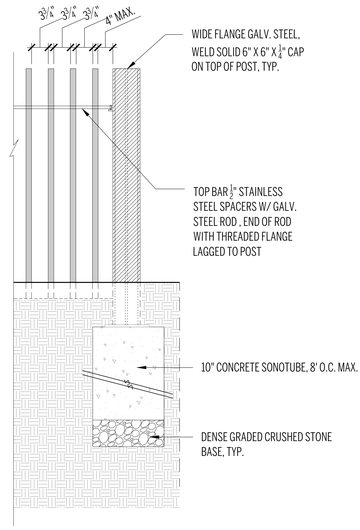
L6.02



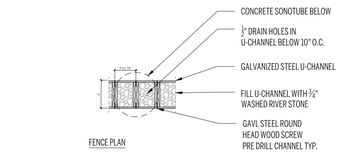
HC5/HC5 Double Station
Approximately 540 lbs (245 kg)

CleanCUBE BY ECUBE.
-120L CAPACITY, SOLAR POWERED
-FOOT PEDAL OPERATED. SEE SPECS

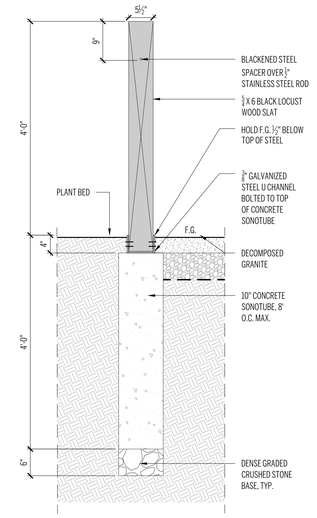
9 **CLEAN CUBE TRASH COMPACTER (WR)**
1" = 1'-0"



FENCE SECTION AT POST

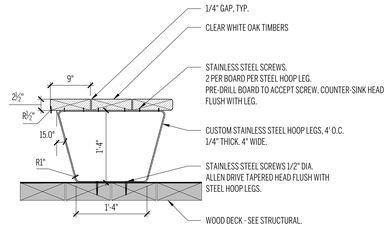


FENCE PLAN

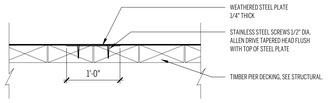


FENCE SECTION

3 **WOODEN SLAT FENCE AT PLAYGROUND**
1" = 1'-0"



2 **RECLAIMED LUMBER BENCH AT PIER**
1" = 1'-0"



1 **WEATHERING STEEL BAND AT PIER DECK**
1" = 1'-0"

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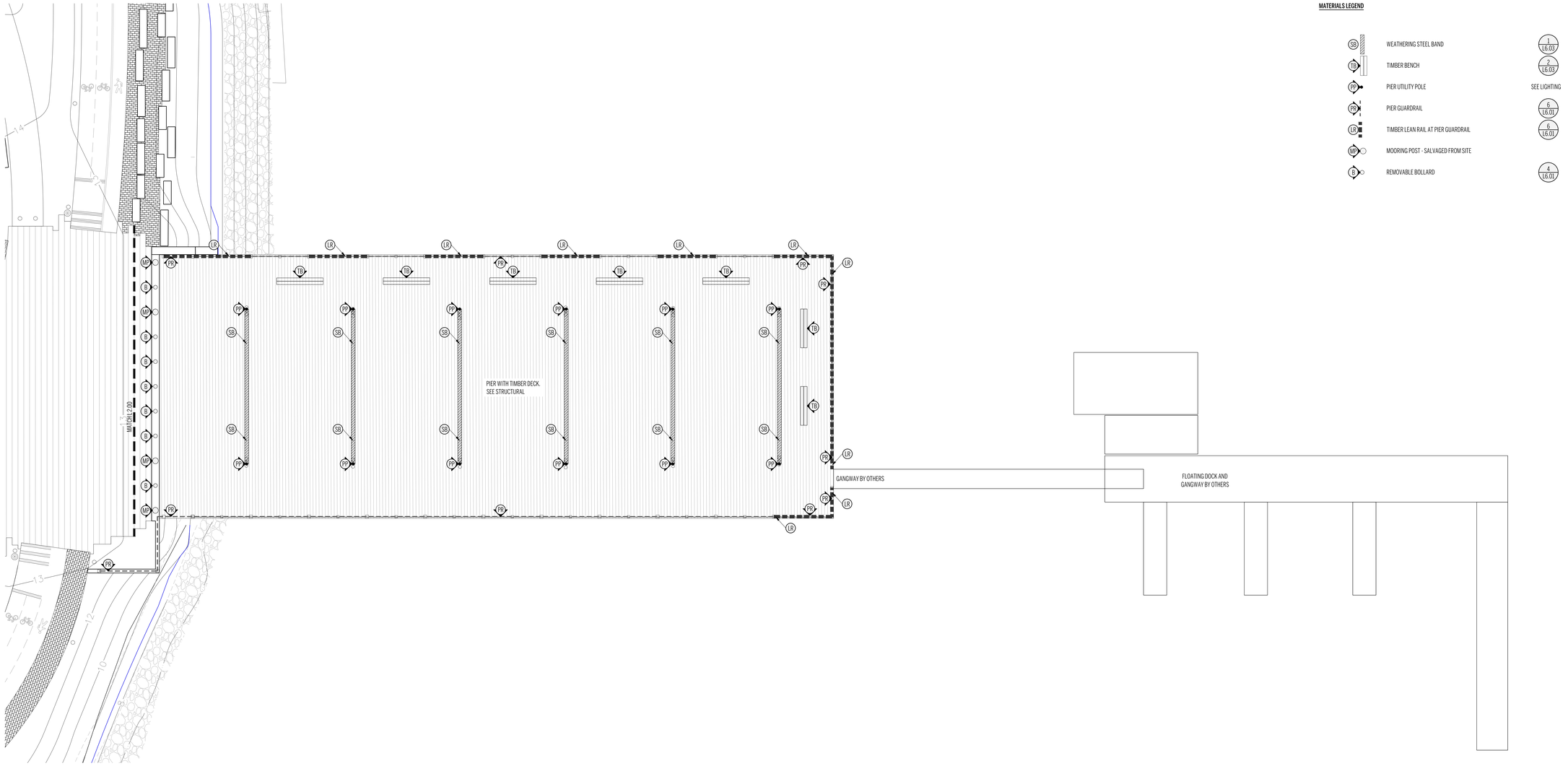
Drawing Title
--- Site Details

L6.03



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Drawn By	ZH SK JC MS
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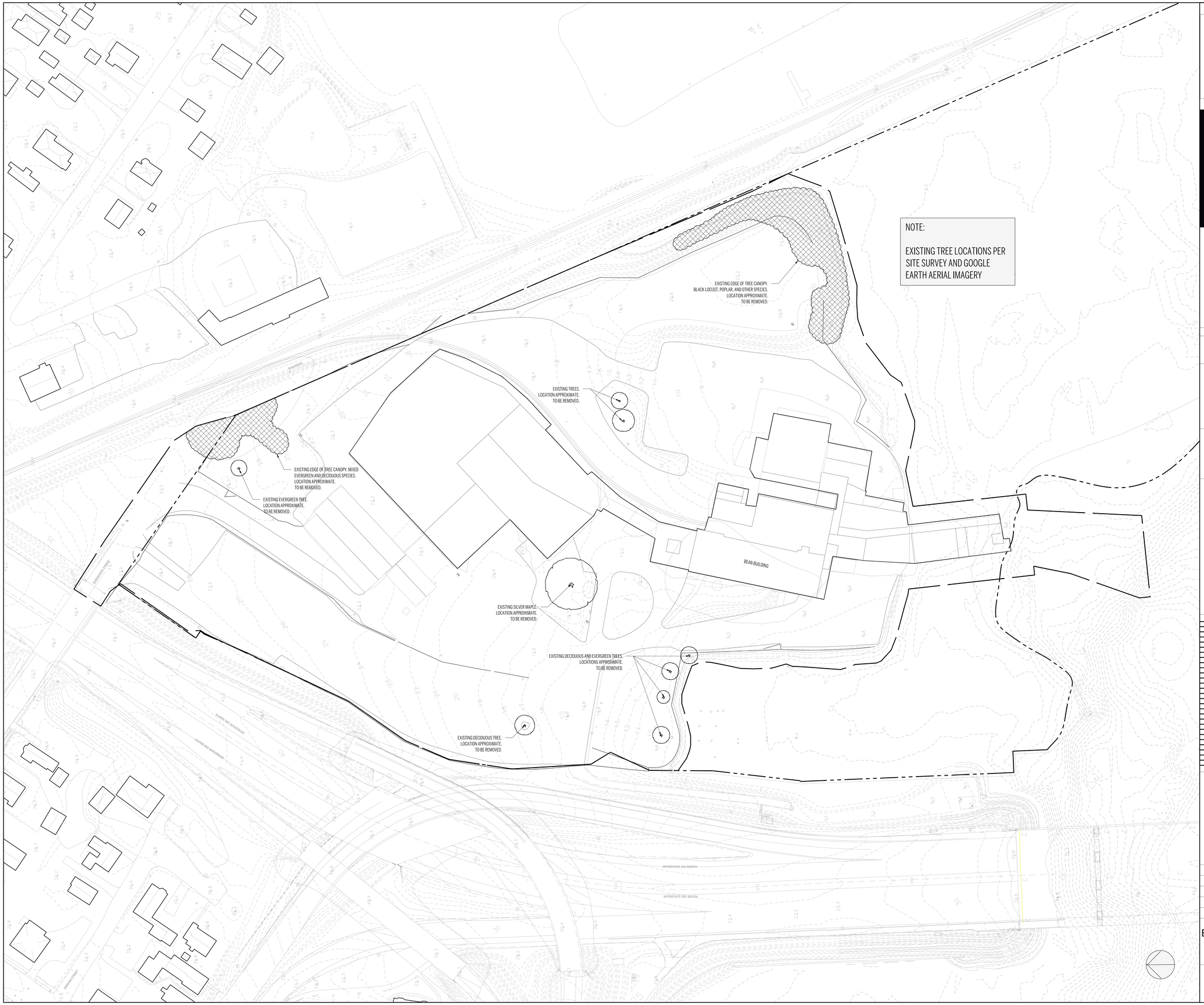
Date	27 OCTOBER 2023
Scale	1" = 10'

Drawing Title
Pier Plan

L8.00



NOTE:

EXISTING TREE LOCATIONS PER SITE SURVEY AND GOOGLE EARTH AERIAL IMAGERY

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Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	ZH SK JC MS
Checked	STIMSON
Date	22 MARCH 2024
Scale	1" = 40'

Drawing Title

Existing Trees

L1.00

PARKING STRUCTURE

BEAN BUILDING

LEARNING, RESEARCH, AND COLLABORATION BUILDING

MATCH L.2.01
MATCH L.2.00

LIMIT OF WORK

8 QTY 9

8 QTY 6

MATCH L.2.00
MATCH L.8.00

NOTE: CONTRACTOR TO REMOVE CONSTRUCTION FILL DEBRIS FROM BEACH, INCLUDING BRICK, TILE, GRANITE BLOCK, AND OTHER MATERIALS IDENTIFIED BY OWNER AND DESIGN TEAM

PATHWAY AT PROPERTY LINE PLAN
1"=20'

MATERIALS LEGEND

PAVEMENT

P1	ASPHALT PAVING - VEHICULAR	1 L6.00
P2	CONCRETE PAVEMENT-PEDESTRIAN	2 L6.00
P3	CONCRETE PAVEMENT-VEHICULAR	3 L6.00
P4	GRANITE PAVERS 01 - VEHICULAR	5 L6.00
P5	GRANITE PAVERS 02-VEHICULAR	5 L6.00
P6	PRECAST CONCRETE PAVERS - VEHICULAR	7 L6.00
P7	PRECAST CONCRETE PAVERS - PEDESTRIAN	7 L6.00
P8	GRANITE PAVERS 01- PEDESTRIAN	6 L6.00
P9	GRANITE COBBLESTONE PAVERS - PERMEABLE	8 L6.00
P10	GRANITE COBBLESTONE PAVERS- VEHICULAR	7 L6.00
P11	DECOMPOSED GRANITE PAVEMENT	13 L6.00

CURBS AND EDGES

C1	GRANITE CURB - 6" RAISED	9 L6.00
C2	GRANITE CURB - FLUSH	11 L6.00
C3	GRANITE CURB - TRANSITION	15 L6.00
C4	GRANITE CURB - MOUNTABLE	12 L6.00
E1	STEEL EDGING	14 L6.00
E2	RECLAIMED RAIL TRACK	
TD	TRENCH DRAIN	3 L6.02
SI	STEEL CURB INLET (QUANTITY: 5)	21 L6.00
RR	SHORELINE PROTECTION, SEE MARINE ENGINEER DRAWINGS	

WALLS AND STAIRS

W1	ARCHITECTURAL CONCRETE RETAINING WALL	1 L6.01
W2	CONCRETE RETAINING WALL WITH STONE VENEER	2 L6.01
W3	CONCRETE FOUNDATION WALL AT WOOD DECK	16 L6.00
W4	BOARD FORMED CONCRETE RETAINING WALL	1 L6.01
W5	MONOLITHIC STONE RETAINING WALL ON DENSE GRADED CRUSHED STONE BASE	19 L6.00
S1	MONOLITHIC GRANITE STAIRS ON CONCRETE FOUNDATION	17 L6.00

SITE FURNISHINGS

WB	MONOLITHIC GRANITE BENCH WITH WOOD INSET	1 L6.02
WW	WOOD BENCH AT CONCRETE RETAINING WALL	20 L6.00
CB	PRE-CAST CONCRETE BRIDGE - PEDESTRIAN	2 L6.02
WD	WOOD DECK AT TERRACED LANDSCAPE	16 L6.00
HR	STAINLESS STEEL HANDRAIL WITH INTEGRATED LIGHTING	18 L6.00
CR	STAINLESS STEEL CURB RAIL	2 L6.02
TG	VEHICULAR TIMBER GUARDRAIL	3 L6.01
DW	DETECTABLE WARNING STRIP AT ADA CURB RAMP	15 L6.00
VG	VEHICULAR GATE (QUANTITY: 1)	7 L6.01
BR	BIKE RACK (QUANTITY: 95)	5 L6.01
B	REMOVABLE BOLLARD (QUANTITY: 17)	4 L6.01
F	WOODEN SLAT FENCE AT PLAYGROUND	3 L6.03

MATERIALS NOTES:

1. MAKE TRANSITIONS BETWEEN CHANGES IN PAVING SMOOTH AND GRADUAL WITH NO SHARP OR ABRUPT CHANGES UNLESS OTHERWISE SHOWN.
2. REFER TO LANDSCAPE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

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LAND-USE PERMIT SET

Number	Revision	Date

REGISTERED LANDSCAPE ARCHITECT
STEPHEN C. STIMSON
No. 3916
STATE OF MAINE

Stamp

Job #	2202		
Project	THE ROUX INSTITUTE		
Drawn By	ZH SK JC MS	Checked	STIMSON
Date	22 MARCH 2024		
Scale	1" = 20'		

Drawing Title

Materials Plan

L3.00

MATERIALS LEGEND

PAVEMENT

P1	ASPHALT PAVING - VEHICULAR	1 / L6.00
P2	CONCRETE PAVEMENT-PEDESTRIAN	2 / L6.00
P3	CONCRETE PAVEMENT-VEHICULAR	3 / L6.00
P4	GRANITE PAVERS 01 - VEHICULAR	5 / L6.00
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P11	DECOMPOSED GRANITE PAVEMENT	13 / L6.00

CURBS AND EDGES

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C2	GRANITE CURB - FLUSH	11 / L6.00
C3	GRANITE CURB - TRANSITION	15 / L6.00
C4	GRANITE CURB - MOUNTABLE	12 / L6.00
E1	STEEL EDGING	14 / L6.00
E2	RECLAIMED RAIL TRACK	
TD	TRENCH DRAIN	3 / L6.02
SI	STEEL CURB INLET (QUANTITY: 5)	21 / L6.00
RR	SHORELINE PROTECTION, SEE MARINE ENGINEER DRAWINGS	

WALLS AND STAIRS

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S1	MONOLITHIC GRANITE STAIRS ON CONCRETE FOUNDATION	17 / L6.00

SITE FURNISHINGS

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WW	WOOD BENCH AT CONCRETE RETAINING WALL	20 / L6.00
CB	PRE-CAST CONCRETE BRIDGE - PEDESTRIAN	2 / L6.02
WD	WOOD DECK AT TERRACED LANDSCAPE	16 / L6.00
HR	STAINLESS STEEL HANDRAIL WITH INTEGRATED LIGHTING	18 / L6.00
CR	STAINLESS STEEL CURB RAIL	2 / L6.02
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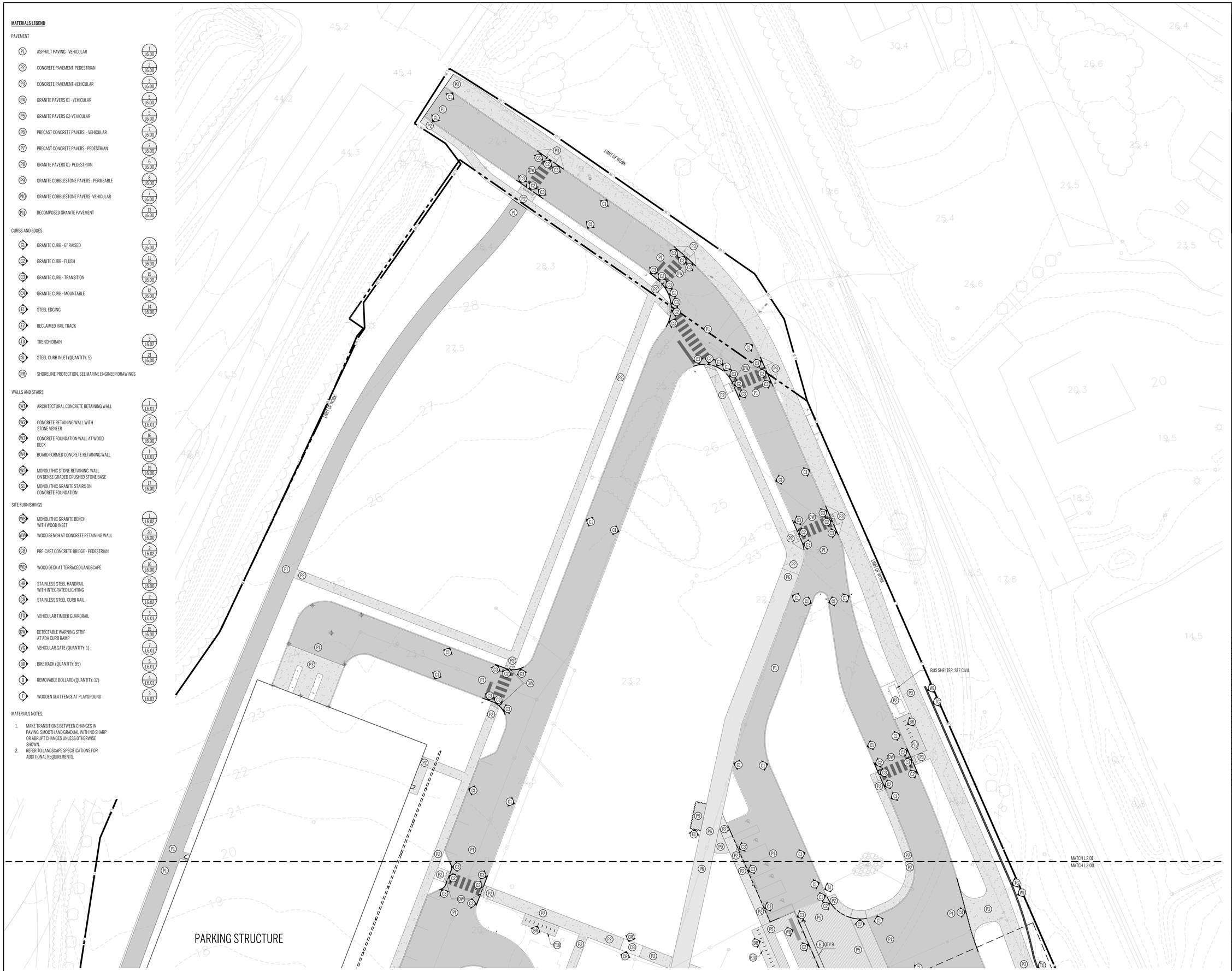
DW	DETECTABLE WARNING STRIP AT ADA CURB RAMP	15 / L6.00
VG	VEHICULAR GATE (QUANTITY: 1)	7 / L6.01
BR	BIKE RACK (QUANTITY: 95)	5 / L6.01
B	REMOVABLE BOLLARD (QUANTITY: 17)	4 / L6.01
F	WOODEN SLAT FENCE AT PLAYGROUND	3 / L6.03

MATERIALS NOTES:

1. MAKE TRANSITIONS BETWEEN CHANGES IN PAVING SMOOTH AND GRADUAL WITH NO SHARP OR ABRUPT CHANGES UNLESS OTHERWISE SHOWN.
2. REFER TO LANDSCAPE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.



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LAND-USE PERMIT SET

Number	Revision	Date

STEPHEN C. STIMSON No. 3916 — LICENSED LANDSCAPE ARCHITECT — STATE OF MAINE

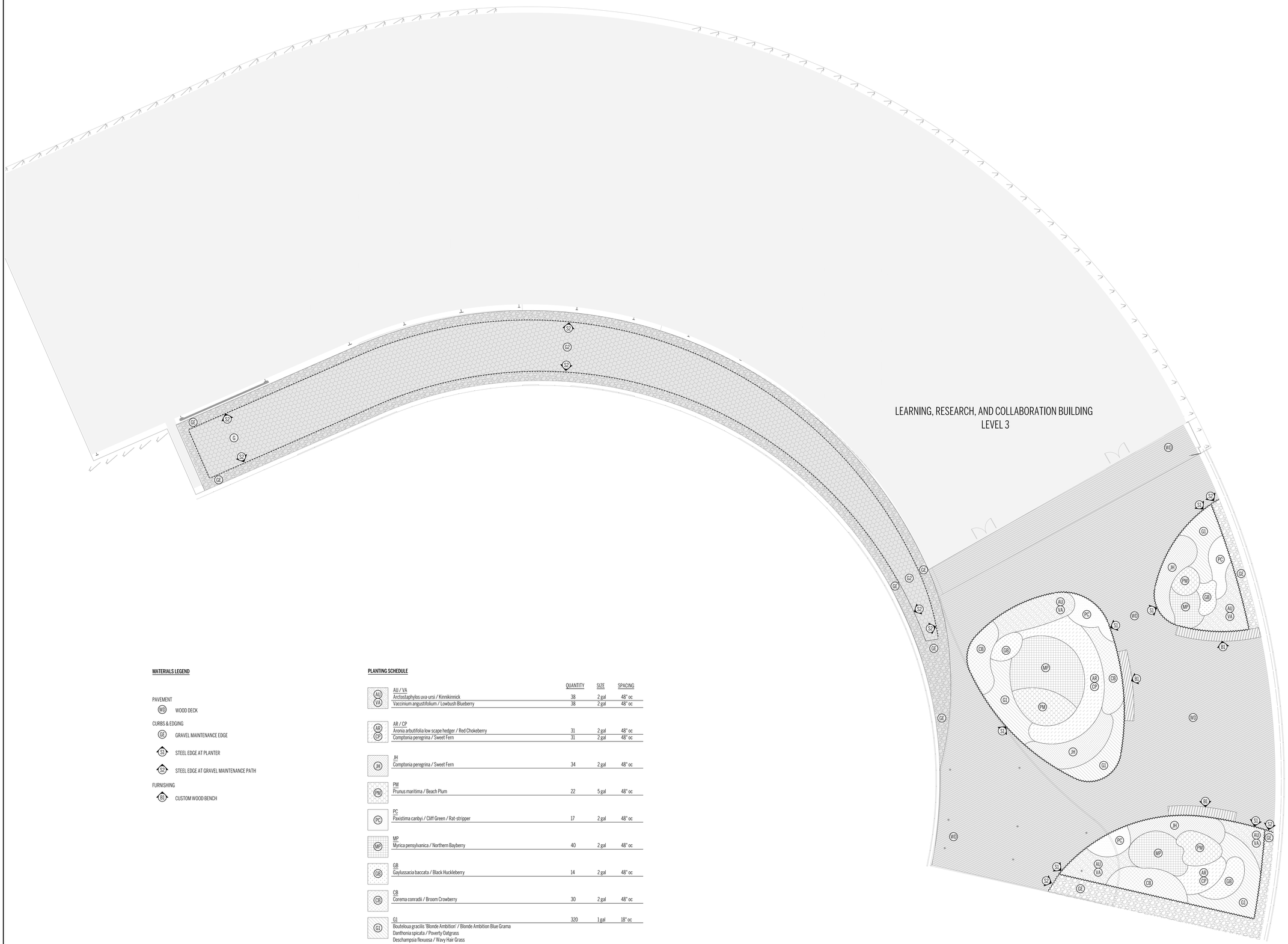
Stamp

Job #	2202		
Project	THE ROUX INSTITUTE		
Drawn By	ZH SK JC MS	Checked	STIMSON
Date	22 MARCH 2024		
Scale	1" = 20'		

Drawing Title

Materials Plan

L3.01



MATERIALS LEGEND

PAVEMENT

WD WOOD DECK

CURBS & EDGING

GE GRAVEL MAINTENANCE EDGE

S1 STEEL EDGE AT PLANTER

S2 STEEL EDGE AT GRAVEL MAINTENANCE PATH

FURNISHING

B1 CUSTOM WOOD BENCH

PLANTING SCHEDULE

		QUANTITY	SIZE	SPACING
AU / VA				
AU	Arctostaphylos uva-ursi / Kinnikinnick	38	2 gal	48" oc
VA	Vaccinium angustifolium / Lowbush Blueberry	38	2 gal	48" oc
AR / CP				
AR	Aronia arbutifolia low scape hedger / Red Chokeberry	31	2 gal	48" oc
CP	Comptonia peregrina / Sweet Fern	31	2 gal	48" oc
JH				
JH	Comptonia peregrina / Sweet Fern	34	2 gal	48" oc
PM				
PM	Prunus maritima / Beach Plum	22	5 gal	48" oc
PC				
PC	Paxistima canbyi / Cliff Green / Rat-stripper	17	2 gal	48" oc
MP				
MP	Myrica pensylvanica / Northern Bayberry	40	2 gal	48" oc
GB				
GB	Gaylussacia baccata / Black Huckleberry	14	2 gal	48" oc
CB				
CB	Corema conradii / Broom Crowberry	30	2 gal	48" oc
G1		320	1 gal	18" oc
G1	Bouteloua gracilis 'Blonde Ambition' / Blonde Ambition Blue Grama Danthonia spicata / Poverty Oatgrass Deschampsia flexuosa / Wavy Hair Grass Echinacea pallida / Pale Purple Coneflower Festuca rubra / Red Fescue Ionactis linariifolia / Flaxleaf Aster Juncus trifidus / Highland Rush Schizachyrium scoparium / Little Bluestem Sibbaldiopsis tridentata / Three-leaved Cinquefoil Solidago caesia / Wreath Goldenrod Symphyotrichum novae-angliae / New England Aster			
G2		3,628 SF	LiveRoof Maxx (8" soil depth)	
G2	Bouteloua gracilis 'Blonde Ambition' / Blonde Ambition Blue Grama Danthonia spicata / Poverty Oatgrass Deschampsia flexuosa / Wavy Hair Grass Echinacea pallida / Pale Purple Coneflower Festuca rubra / Red Fescue Ionactis linariifolia / Flaxleaf Aster Juncus trifidus / Highland Rush Schizachyrium scoparium / Little Bluestem Sibbaldiopsis tridentata / Three-leaved Cinquefoil Solidago caesia / Wreath Goldenrod Symphyotrichum novae-angliae / New England Aster			

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Drawn By	ZH SK JC MS
Checked	STIMSON
Date	22 MARCH 2024
Scale	1" = 10'

Drawing Title
Roof Plan

L3.10

PARKING STRUCTURE

MATCH INSET PLAN
MATCH L4.00

MATCH L4.01
MATCH L4.00

LEARNING, RESEARCH, AND COLLABORATION BUILDING

BEAN BUILDING

5,212 sf M1

3,744 sf M2

811 sf M1

4,444 sf M1

7,837 sf M2

771 sf M1

2,557 sf M2

4,904 sf M2

4,619 sf M1

556 sf M1

992 sf M1

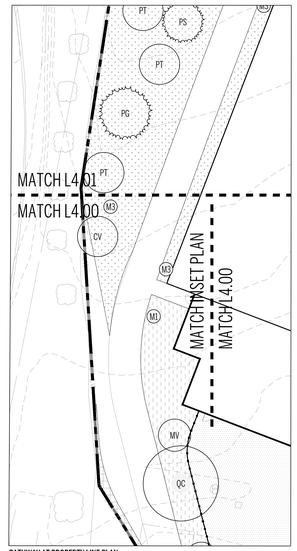
2,413 sf M2

526 sf M1

REFER TO L4.02 FOR NATIVE STATUS OF PROPOSED PLANT SPECIES WITHIN THIS AREA

REFER TO L4.02 FOR NATIVE STATUS OF PROPOSED PLANT SPECIES WITHIN THIS AREA

REFER TO L4.02 FOR NATIVE STATUS OF PROPOSED PLANT SPECIES WITHIN THIS AREA



PATHWAY AT PROPERTY LINE PLAN
1"=20'

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Drawing Title
Planting Plan

L4.00



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Drawing Title
Planting Plan

L4.01

MEADOW SITE PREPARATION AND SEEDING NOTES

1) Materials Delivery, Storage, and Handling:
   a) General:
      i) Deliver materials only after preparation for on-site seeding of the meadow seeding area and adjacent areas has been completed and accepted.
      ii) Prohibit materials only after preparation for on-site seeding of the meadow seeding area and adjacent areas has been completed and accepted.
      iii) Prohibit storage of any equipment or materials on the areas to be seeded once the final mowing prior to seeding has occurred.
   b) Seed:
      i) Seed shall be stored at temperatures between 40- and 60-degrees F and with a relative humidity of between 25-60%.
      ii) Protect seed from drying out, becoming moist or wet, overheating, and /or from contamination during delivery. Seed that has become wet or moldy shall not be accepted.
      iii) Transport temperature shall not exceed 105 F at any time. If transit from cold storage to sowing is greater than 10 days, seed must be kept under storage temperatures and relative humidity described above.

2) Installation Seasons:
   a) Work only within seasonal limitations for proper seeding. These are optimal times for rapid establishment of optimal ground cover, and suppression of weeds.
   b) Permanent meadow seeding should be sown between *July 1 – Aug. 15, Nov. 15 – Dec. 15*
   c) If sowing is being done between August 1 and August 31, use 25% more seed per unit area and expect more weed management.
   d) If seeding occurs between October 1 and January 31st, it must be done when there is no snow on the ground.

3) Site Preparation Acceptance:
   a) Prior to seeding, the site must be inspected by the Landscape Architect, Meadow Specialist, and Meadow Installer to ensure that weed control is acceptable, seed bed is in the appropriate condition for seeding, and the site has been correctly delineated.
   b) If it is determined that conditions are not acceptable for seeding, the unacceptable areas should be mitigated and re-inspected by the Landscape Architect and Meadow Consultant prior to seeding.

4) Seeding and Meadow Acceptance:
   a) If the site preparation process starts and seeding does not occur within proper seeding windows, the Owner shall sow and manage a cover crop to protect and stabilize meadow areas until the next occurring seeding window.
   b) The Landscape Architect and Meadow Consultant must inspect site prior to seed installation and provide site preparation acceptance.
   c) Seeding shall consist of soil preparation, seeding, weeding, and otherwise providing all labor and materials necessary to secure the establishment of acceptable vegetative layer.
   d) After seeding, the site must be inspected by the Landscape Architect and the Meadow Consultant to ensure that seeding has been completed as per construction drawings.
   e) Meadow acceptance occurs a minimum of 120 days from completion of final meadow seeding phase and between May and September
   f) Meadow acceptance shall be an acceptable stand of meadow which is defined to mean a uniform coverage well established, close stands of plants that meet the following criteria: a minimum of 8 thriving desirable plants per square foot (excluding nurse crop), no bare or dead spots over 36" maximum in any dimension, no more than 10% of the meadow is bare, and free from disease, and detrimental insect infestation.
   g) Begin management practice immediately after seeding is complete for a given area.

5) Meadow Seed:
   a) See Plant Lists in the Drawings for Meadow Seed Mixes
   b) Provide fresh, new crop seed that is 98% Pure Live Seed (for tested species) or better. In no case shall weed seed content exceed 1% by weight. All seeds shall comply with Federal and State seed laws. Seed shall not be coated with herbicides and/or fungicides.
   c) Seed mixes shall be delivered in individual bags labeled by mix and then by seed size within each mix.
   d) Small Seed: 25,000 seeds per/oz or less. Individual seeds can be picked up by hand.
   e) Very Fine Seed: 25,000+ seeds/oz. Individual seeds are too small to be picked up by hand.
   f) Grain: Cover crop grain seed and large wildflower seed (¼-¼" in size)
   g) Fluffy Seed: Seed with fluffy, feathery seed coat

6) Seed Mix Suppliers:
   a) Ernst Conservation Seeds, Inc., 8884 Mercer Pike, Meadville PA 16335, Tel: 800-873-3321, http://www.ernstseed.com/.
   b) Prairie Moon Nursery, 32115 Prairie Lane, Winona, MN 55987. Tel: (8866)417-8156, www.prairiemoon.com
   c) Roundstone Native Seed Company, 9764 Raider Hollow Rd, Upton, KY 42784, Tel: (270) 531-3034, https://roundstoneseed.com
   d) Equal approved by the Architect and Meadow Consultant.

7) Cover Crops
   a) Cover Crop shall be installed in areas disturbed during construction for soil stabilization prior to permanent meadow seed: May 1 – Oct. 1
   b) Cover crops should only be sown in areas with new soil that will not need Erosion Control Fabric, or to protect and stabilize soils outside of the seeding window.

8) Seeding Materials and Equipment:
   a) Use flake straw mulchings as a seed mix broadcasting agent.
   b) Do not use fertilizer.
   c) Mechanized equipment for finished grading shall be skid-steer (full-size or mini) or tractor with Harley Rake/Power Rake attachment.
   d) Hand seeding techniques shall be used to sow meadow seed in all areas.
   e) Hydroseeding is not allowed.
   f) No mulch shall be used in seeded meadow areas.

9) Site Preparation: GENERAL
   a) Pre-installation examination and sequencing are required: Before beginning any establishment phase (site preparation, seeding, planting), the Contractor shall examine previous work, related work, and conditions under which this work is to be performed and notify the Landscape Architect in writing of all deficiencies and conditions detrimental to the proper completion of this work. Beginning work means Contractor accepts substrates, previous work, and conditions.
   b) The Contractor shall not commence work associated with the installation of meadows until all work in the work areas is complete and accepted by the Landscape Architect.
   c) The following shall be completed prior to the commencement of seeding:
      i) Fine gradings and the removal of all debris and weeds.
      ii) Utilities have been installed and accepted.
      iii) All trees, shrubs, and perennials have been planted.
      iv) Permanent and temporary irrigation for trees, shrubs, and perennials located within or adjacent to meadow seeding areas has been installed and accepted.
      v) Stormwater management areas, swales, and drainage areas shall remain dry during seeding and meadow establishment. The contractor and owner shall coordinate site drainage during meadow establishment so to bypass seeded areas from stormwater surge.
   d) Prior to seeding, stake areas with pin flags that identify seed type for each area.
   e) Do not proceed with seeding until the extent and distribution of seeding/planting zones has been accepted by the Landscape Architect.
   f) Meadow seed mix installation should not occur until any vegetation management procedures, such as weed control or other vegetation removals, in meadow areas have been completed and accepted.
   g) The Landscape Architect and Meadow Consultant must inspect site prior to seed installation and provide site preparation acceptance.
   h) A properly compacted seedbed should not allow a shoe to sink more than ½" when walking on the seedbed.
   i) Meadow areas shall have at least one full growing season of weed control prior to seeding and must be inspected by the Meadow Consultant prior to seeding.
   j) Cover crops should only be sown in areas with new soil that will not need Erosion Control Fabric, or to protect and stabilize soils outside of the seeding window.

10) Site Preparation for Dormant Seeding shall occur in the following sequence:
   a) Early May: Site Visit #1 -Site visit with the Contractor and Meadow Consultant to finalize the spray plan (timing and products) and to delineate all meadow extents where soil disturbance will not occur. Once meadow has been delineated all mowing within this area should cease.
   b) Mid-June: Spray #1 - Broadcast spray area with Glyphosate, and other products as specified in Early May visit. At least two weeks without mowing should have occurred prior to the first spray.
   c) Mid-July: Mow #1 - Mow any areas where growth is higher than 6" to a height of 4". Wait at least 3 weeks from the date of the first spray prior to mowing.
   d) Early August: Site Visit #2 -Site visit with Contractor and Meadow Specialist to finalize spray plan (timing and products).
   e) Late August: Spray #2 - Broadcast spray area with Glyphosate, and other products as specified in early August visit.
   f) Mid-September: Mow #2 - Mow any areas where growth is higher than 6" to a height of 4". Wait at least 3 weeks from date of spray prior to mowing.
   g) Early October: -Site Visit #3 -Site visit with Contractor and Meadow Specialist to finalize spray plan (timing and products).
   h) Late October: Spray #3 - Broadcast spray area with Glyphosate, and other products as specified in early October visit.

11) Site Preparation for Summer Seeding shall occur in the following sequence:
   a) Early August: Site Visit #1 - Site visit with contractor and meadow expert to finalize spray plan (timing and products) and to delineate all meadow extents where soil disturbance will not occur. Once meadow has been delineated all mowing within this area should cease.
   b) Late August: Spray #1 - Broadcast spray area with Glyphosate, and other products as specified in early August visit.
   c) Mid-September: Mow #1 - Mow any areas where growth is higher than 6" to a height of 4". Wait at least 3 weeks from date of spray prior to mowing.
   d) Early October: Site Visit #2 -Site visit with Contractor and Meadow Specialist to finalize spray plan (timing and products).
   e) Late October: Spray #2 - Broadcast spray area with Glyphosate, and other products as specified in early October visit.
   f) Early May (the following year): Site Visit #3 -Site visit with contractor and meadow expert to finalize spray plan (timing and products).
   g) Mid-June: Spray #3 - Broadcast spray area with Glyphosate, and other products as specified in early May visit. At least two weeks should without mowing should have occurred prior to the first spray.
   h) Early-July: Mow #2 - Mow any areas where growth is higher than 6" to a height of 4".

12) Permanent Meadow Mix Seeding Installation shall occur in the following sequence:
   a) Install meadow seed mix during the timeline established by this document.
   b) Seeding shall consist of soil preparation, seeding, weeding, and otherwise providing all labor and materials necessary to secure the establishment of acceptable vegetative layer.
   c) Prior to seeding and planting verify meadow area is prepared and ready for vegetation installation and that water is available for seed mixing.
   d) Scarify soil to depth of approximately ¼" using appropriate equipment. Repeat as needed to create a seedbed with approximately 50% of the soil exposed. No tilling should be performed, as this will increase weed presence due to the release of dormant weed seeds below the soil surface.
   e) Segregate the seeds according to mix and then by seed size. For the hand broadcast method, "Fluffy," "Small," and "Grain" seed can be combined (henceforth referred to collectively as "Large" seed). "Very Fine" seed (seed which cannot be picked up individually by hand) must always remain separate.
   f) Bulk up "Large" seed by mixing with an inert bulking material such as sawdust, sand, or flake pine shavings. Seed and bulking material can be mixed on tarps spread on the ground. Slightly dampening the bulking material will help the seed to be evenly distributed throughout the bulked material. Use enough bulking material to allow seed to be evenly distributed over the entire project area.
   g) Seeding must happen within 24 hours of mixing seed with wet material.
   h) Only seed that can be installed in a single workday should be mixed at any given time.
   i) Hand sow large seed that has been bulked up with wet inert material. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
   j) Run over area with dethatcher or power rake to lightly cover large seed no to exceed ¾" depth. Use a hand rake if the area is not accessible with machinery.
   k) Bulk up the "Very fine" seed in the manner described above and broadcast evenly over the prepared surface. Do not incorporate into the soil as these species need light to germinate and will not do so if buried in the soil,
   l) Any stabilization fabrics shall only be placed after permanent seed has been sown and accepted.
   m) Begin management practice immediately after seeding is complete for a given area.

13) Management procedures and activities during meadow establishment shall observe the following guidelines:
   a) In the first growing season seeded vegetation should not be allowed to exceed 12" in height.
   b) As vegetation approaches 12" in the meadow, mow or cut all growth to approximately 4-6" height (approximately once per month during the growing season).
   c) Use flail or rotary-style equipment that will chop dead growth.
   d) Sickle bar type mowers that cut at the base of vegetation and drop plant material intact should not be used as the intact cut plant material can inhibit seedling development.
   e) In locations inaccessible to a mower (wet areas, steep slopes, etc.), string trim vegetation to the specified height.
   f) Areas with live plants should not be mown. Areas should be weeded by hand or with small mechanical equipment where appropriate. Work in these areas to be completed by meadow installer.
   g) Do not irrigate seeded meadow areas unless required for planted vegetation, in which case irrigation should be directed at planted vegetation and not on seeded areas, to the extent possible.
   h) Mow entire meadow one time to height of 4" in March/early April with a flail mower. Do not mow lower than 4". String trim areas inaccessible to a mower.
   i) Spot treat weeds as required (min. 1 spray, max. 3 sprays).
   j) Maintenance contractors shall not blow leaves or other debris in the direction of seeded meadows or within seeded meadows.
   k) Conduct a minimum of two (2) annual meadow checks by a meadow expert.

14) If a meadow is damaged, remove damaged materials if necessary. Restore areas to original grades and reestablish meadow as originally installed following the establishment train time frames.
   a) Request Landscape Architect approval prior to beginning repairs.
   b) If a meadow exhibits unsatisfactory growth, perform soil testing for chemical properties, compaction, and infiltration rates.
   c) Adhere to Landscape Architect's recommended remediation.
   d) Remediation may include additional weed control or re-seeding.

15) Reseeding shall be performed at the request of the Landscape Architect.
   a) Reseeding shall be required if meadow establishment/performance is poor, dead spots are apparent, or other unsuitable conditions are present.
   b) Work shall be performed according to the installation calendar above. Work outside this window is not permitted.
   c) Cut or trim vegetation to maximum of 2" prior to reseeding. Remove cut vegetation from the meadow.
   d) When reseeding, follow the seeding process outlined above.
   e) When reseeding areas where erosion control is in place, apply seed mixture starting at the top of the slope and over the extent of erosion control material to be reseeded. Hand rake to move seed through the erosion control matting towards soil contact.t. Hands sow sand/seed mixture down into the areas between the cut vegetation.

16) Warranty and Management
   a) Begin management practice immediately after seeding is complete for a given area.
   b) Meadow acceptance occurs a minimum of 120 days from completion of final meadow seeding phase and between May and September
   c) The Contractor shall warranty and maintain the meadow for two years following meadow acceptance.

Seed Mix Specifications

Project: ROUX INSTITUTE
Mix: M1 - Upland Meadow
Area in acres = 2.1
Area in sq ft = 93,555
Total seeds per sq ft = 200
% graminoids = 60%

Results (excluding nurse crop)
26 lbs. of seed/acre
55 Total lbs. this mix
40 Total spp.
12 Number of graminoids
28 Number of forbs

Botanical Name	Common Name	Qty	Seeding Notes	Substitutions/Comments
Grasses, Sedges and Rushes				
Andropogon ternarius	Splitbeard Broomsedge	3.30 oz		
Bouteloua gracilis	Blue Grama Grass	14.03 oz		
Carex brevior	Plains Oval Sedge	11.61 oz		
Carex molesta	Field Oval Sedge	22.45 oz		
Carex normalis	Spreading Oval Sedge	4.49 oz		
Carex projecta	Loose-headed Oval Sedge	1.81 oz		
Carex vulpinoidea	Fox Sedge	11.23 oz		
Elymus virginicus	Virginia Rye	26.73 oz		
Eragrostis spectabilis	Purple Lovegrass	1.20 oz		
Juncus tenuis	Path Rush	0.19 oz		
Schizachyrium scoparium	Little Bluestem	374.22 oz		
Tridens flavus	Purpletop	59.50 oz		
Forbs				
Allium cernuum	Nodding Pink Onion	9.85 oz		
Anaphalis margaritacea	Pearly Everlasting	1.03 oz		
Asclepias tuberosa	Butterfly Weed	17.41 oz		
Aster laevis (Symphiotrichum)	Smooth Aster	10.89 oz		
Aster umbellatus (Doellingeria umbellata)	Flat-topped Aster	3.35 oz		
Blephilia hirsuta	Hairy Wood Mint	0.94 oz		
Chamaecrista fasciculata (Cassia)	Partridge Pea	83.16 oz		
Coreopsis lanceolata	Tickseed	11.23 oz		
Coreopsis tinctoria	Plains Coreopsis	2.55 oz		
Echinacea pallida	Pale Purple Coneflower	71.97 oz		
Echinacea purpurea	Purple Coneflower	22.68 oz		
Eryngium yuccifolium	Rattlesnake Master	29.94 oz		
Eupatorium coelestinum (Conoclinium)	Mistflower	1.07 oz		
Gnaphalium obtusifolium	Sweet Everlasting	0.30 oz		
Lespedeza capitata	Round-headed Bush Clover	9.36 oz		
Lobelia spicata	Spike Lobelia	0.25 oz		
Monolarda citriodora	Lemon Mint	2.99 oz		
Monolarda punctata	Horsemint	4.16 oz		
Penstemon digitalis	White Beardtongue	5.76 oz		
Pycnanthemum tenuifolium	Slender Mountain Mint	1.98 oz		
Pycnanthemum virginianum	Mountain Mint	1.02 oz		
Rudbeckia hirta	Black Eyed Susan	2.44 oz		
Solidago juncea	Early Goldenrod	2.25 oz		
Solidago nemoralis	Gray Goldenrod	2.00 oz		
Solidago rigida (Oligoneuron)	Stiff Goldenrod	1.83 oz		
Tradescantia ohiensis	Ohio Spiderwort	9.36 oz		
Verbena hastata	Blue Vervain	1.61 oz		
Zizia aurea	Golden Alexander	34.02 oz		

Nurse Crop
Spring Seeding: Spring Oats (Avena sativa): 20 lb/ac
Early Spring to Later Summer Seeding: Grain Rye (Secale cereale): 30 lb/acre
Fall Seeding: Winter wheat (Triticum aestivum): 108/acre

Project: ROUX INSTITUTE
Mix: M2 - Lowland Meadow
Area in acres = 0.4
Area in sq ft = 18,214
Total seeds per sq ft = 200
% graminoids = 60%

Results (excluding nurse crop)
14 lbs. of seed/acre
6 Total lbs. this mix
30 Total spp.
13 Number of graminoids
17 Number of forbs

Botanical Name	Common Name	Qty	Seeding Notes	Substitutions/Comments
Grasses, Sedges and Rushes				
Carex annectens xanthocarpa	Small Yellow Fox Sedge	1.21 oz		
Carex bebbii	Bebbs Oval Sedge	3.21 oz		
Carex normalis	Spreading Oval Sedge	0.87 oz		
Carex projecta	Loose-headed Oval Sedge	1.76 oz		
Carex vulpinoidea	Fox Sedge	4.37 oz		
Eleocharis obtusa	Blunt Spike Rush	0.66 oz		
Elymus virginicus	Virginia Rye	15.61 oz		
Juncus canadensis	Canada Rush	0.44 oz		
Juncus effusus	Common Rush	0.33 oz		
Juncus tenuis	Path Rush	0.06 oz		
Scirpus atrovirens	Dark-Green Bulrush	0.24 oz		
Scirpus cyperinus	Wool Grass	0.06 oz		
Tridens flavus	Purpletop	11.56 oz		
Forbs				
Asclepias incarnata	Swamp Milkweed	9.11 oz		
Aster lateriflorus (Symphiotrichum)	Calico Aster	0.29 oz		
Aster novae-angliae (Symphiotrichum)	New England Aster	2.21 oz		
Aster novi-belgii (Symphiotrichum)	New York Aster	1.91 oz		
Chamaecrista fasciculata (Cassia)	Partridge Pea	16.19 oz		
Coreopsis lanceolata	Tickseed	1.46 oz		
Coreopsis tinctoria	Plains Coreopsis	0.33 oz		
Eupatorium coelestinum (Conoclinium)	Mistflower	0.33 oz		
Liatris spicata	Blazing Star	6.62 oz		
Lobelia cardinalis	Cardinal Flower	0.44 oz		
Lycopus americanus	Water Horehound	0.56 oz		
Monolarda punctata	Horsemint	0.81 oz		
Penstemon digitalis	White Beardtongue	1.12 oz		
Pycnanthemum muticum	Big Leaf Mountain Mint	0.33 oz		
Pycnanthemum virginianum	Mountain Mint	0.79 oz		
Verbena hastata	Blue Vervain	0.78 oz		
Zizia aurea	Golden Alexander	6.62 oz		

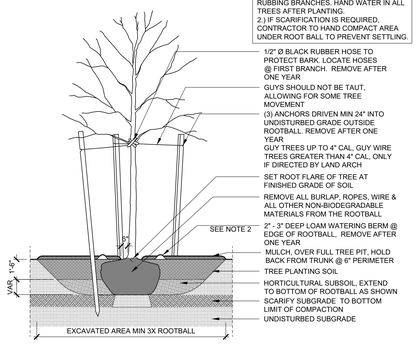
Nurse Crop
Spring Seeding: Spring Oats (Avena sativa): 20 lb/ac
Early Spring to Later Summer Seeding: Grain Rye (Secale cereale): 30 lb/acre
Fall Seeding: Winter wheat (Triticum aestivum): 108/acre

Project: ROUX INSTITUTE
Mix: M3 - Perimeter Meadow
Area in acres = 0.4
Area in sq ft = 17,307
Total seeds per sq ft = 200
% graminoids = 100%

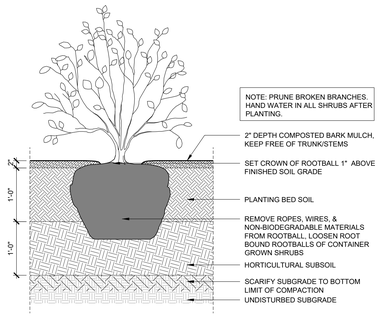
Results (excluding nurse crop)
31 lbs. of seed/acre
12 Total lbs. this mix
13 Total spp.
13 Number of graminoids
0 Number of forbs

Botanical Name	Common Name	Qty	Seeding Notes	Substitutions/Comments
Grasses, Sedges and Rushes				
Andropogon ternarius	Splitbeard Broomsedge	1.02 oz		
Bouteloua curtipendula	Sidecats Grama	28.80 oz		
Bouteloua gracilis	Blue Grama Grass	4.33 oz		
Carex brevior	Plains Oval Sedge	3.58 oz		
Carex molesta	Field Oval Sedge	6.92 oz		
Carex normalis	Spreading Oval Sedge	1.38 oz		
Carex projecta	Loose-headed Oval Sedge	0.56 oz		
Carex vulpinoidea	Fox Sedge	3.46 oz		
Elymus virginicus	Virginia Rye	8.24 oz		
Eragrostis spectabilis	Purple Lovegrass	0.37 oz		
Juncus tenuis	Path Rush	0.06 oz		
Schizachyrium scoparium	Little Bluestem	115.38 oz		
Tridens flavus	Purpletop	18.35 oz		

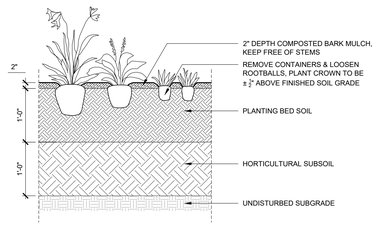
Nurse Crop
Spring Seeding: Spring Oats (Avena sativa): 20 lb/ac
Early Spring to Later Summer Seeding: Grain Rye (Secale cereale): 30 lb/acre
Fall Seeding: Winter wheat (Triticum aestivum): 108/acre



3 TREE PLANTING
1/4" = 1'-0"



2 SHRUB PLANTING
1" = 1'-0"



1 PERENNIAL AND GROUNDCOVER PLANTING
1" = 1'-0"

NATIVITY LEGEND

- NATIVE TO CUMBERLAND COUNTY, MAINE
- NATIVE TO MAINE (not including Cumberland County)
- NATIVE TO NEW ENGLAND (not including Maine)
- NATIVE TO NORTH AMERICA (not including Maine or other New England states)
- EXOTIC / NOT NATURALLY OCCURRING IN NORTH AMERICA
- CULTIVAR

NATIVITY NOTES
1. Nativity to Maine and New England per Native Plant Trust Go Botany, adapted from BONAP, https://gobotany.nativeplanttrust.org/.
2. Nativity to North America per BONAP, https://bonap.net/tdc

Species are intended as placeholders in lieu of Acer. Final species selection will be determined per pending collaboration with City Arborist.

PLANT SCHEDULE

TREES		BOTANICAL / COMMON NAME	CONT	SIZE	QTY	REMARKS
AB	●	Abies balsamea / Balsam Fir	B & B	5'-6" H	3	
AA	● ●	Amelanchier arborea 'Autumn Brilliance' / Autumn Brilliance Downy Serviceberry	B & B	3'-4" H	43	
BA	●	Betula alleghaniensis / Yellow Birch	B & B	1.5"-2" Cal	24	
BP1	●	Betula papyrifera / Paper Birch	B & B	1.5"-2" Cal	22	
BP	●	Betula papyrifera / Paper Birch	B & B	1.5"-2" Cal	10	
BG	●	Betula populifolia / Gray Birch	B & B	6' - 8' H	4	
CD	●	Calocedrus decurrens / Incense Cedar	B & B	5'-6" H	5	
CO	●	Carya ovata / Shagbark Hickory	B & B	2"-2.5" Cal	3	
CC	●	Cercis canadensis / Eastern Redbud	B & B	3'-4' H	10	
CT	●	Chamaecyparis thyoides / Atlantic White Cypress	B & B	5'-6' H	4	
CV	● ●	Crataegus viridis 'Winter King' / Winter King Hawthorn	B & B	5'-6' H	15	
GK	●	Gymnocladus dioica / Kentucky Coffeetree	B & B	2"-2.5" Cal	4	
JC	●	Juglans cinerea / Butternut	B & B	2"-2.5" Cal	6	
LL	●	Larix laricina / Tamarack	B & B	8'-10' H	13	
LL2	●	Larix laricina / Tamarack	B & B	5'-6' H	3	
MV	●	Magnolia virginiana / Sweetbay Magnolia	B & B	4'-5' H	4	
MS	●	Malus sargentii / Sargent Crabapple	B & B	4'-5' H	2	
NS	●	Nyssa sylvatica / Tupelo	B & B	1.5"-2" Cal	21	
PG	●	Picea glauca / White Spruce	B & B	6' - 7' H	12	
PR	●	Pinus rigida / Pitch Pine	B & B	3'-4' H	31	
PS	●	Pinus strobus / White Pine	B & B	6' - 7' H	21	
PA	●	Platanus x acerifolia / London Plane Tree	B & B	3"-3.5" Cal	38	
PT	●	Populus tremuloides / Quaking Aspen	B & B	1.5"-2" Cal	38	
QA	●	Quercus alba / White Oak	B & B	1.5"-2" Cal	19	
QB	●	Quercus bicolor / Swamp White Oak	B & B	2"-2.5" Cal	26	
QC	●	Quercus coccinea / Scarlet Oak	B & B	2"-2.5" Cal	3	
QI	●	Quercus ilicifolia / Scrub Oak	B & B	2"-2.5" Cal	3	
QM	●	Quercus macrocarpa / Burr Oak	B & B	2"-2.5" Cal	1	
QR	●	Quercus rubra / Red Oak	B & B	2"-2.5" Cal	19	
SS	●	Sassafras albidum / Sassafras	5 Gal.	1"-1.5" Cal	7	
TO	●	Thuja occidentalis / American Arborvitae	B & B	6'-7' H	9	
TG	●	Thuja standishii x plicata 'Green Giant' / Green Giant Arborvitae	B & B	5'-6' H	12	
TA	●	Tilia americana / American Linden	B & B	1.5"-2" Cal	2	

SHRUBS		AVG SIZE	SPACING	QTY	AREA
SH	Shrub (See SHRUBS below for ground plane species list)	2 GAL	48" OC	3,300	50,913 SF

PERENNIALS		AVG SIZE	SPACING	QTY	AREA
P	Perennials - container (See PERENNIALS below for ground plane species list)	1 QT	30" OC	4,648	27,800 SF
MP	Perennials - plug (See PERENNIALS below for ground plane species list)	2" Plug	18" o.c.	48,753	89,360 SF

LAWN		AREA
L	Lawn sod	41,120 SF

SEEDED AREAS		SIZE	SPACING	AREA	REMARKS
M3	Perimeter Meadow (See Seed Mix Specifications for species list)	SEED		20,799 sf	
M1	Upland Meadow (See Seed Mix Specifications for species list)	SEED		90,829 sf	
M2	Lowland Meadow (See Seed Mix Specifications for species list)	SEED		21,455 sf	

NOTE: Tree caliper sizes listed are intended to depict the average size of all trees installed. Exact installed sizes may vary.

SPECIES LIST (GROUND PLANE)

SHRUBS
SHRUB PALETTE
- Arctostaphylos uva-ursi / Kinnikinnick
- Aronia arbutifolia / Red Chokeberry
- Aronia arbutifolia low scape hedger / Red Chokeberry
- Celphanthus occidentalis / Buttonbush
- Clethra alnifolia / Mountain Sweet Pepperbush
- Clethra alnifolia 'Hummingbird' / Hummingbird Summersweet
- Comptonia peregrina / Sweet Fern
- Fothergilla gardenii / Dwarf Fothergilla
- Gaylussacia baccata / Black Huckleberry
- Ilex glabra 'Shamrock' / Shamrock Inkberry Holly
- Ilex verticillata / Winterberry
- Ilex verticillata 'Red Sprite' / Red Sprite Winterberry
- Juniperus horizontalis / Creeping Juniper
- Kalmia angustifolia / Sheep Laurel
- Myrica gale / Sweetgale
- Prunus maritima / Beach Plum
- Rhododendron viscosum / Swamp Azalea
- Spiraea alba / Meadowsweet
- Vaccinium corymbosum / Highbush Blueberry
- Viburnum dentatum / Viburnum
- Viburnum dentatum 'Christom' / Blue Muffin® Arrowwood Viburnum
- Viburnum trilobum 'Compactum' / Compact American Cranberrybush
- Viburnum x 'Burkwoodii' / Burkwood Viburnum

PERENNIALS
PERENNIALS
- Achillea millefolium / Common Yarrow
- Actaea racemosa / Black Snakeroot
- Adiantum pedatum / Northern Maidenhair Fern
- Ammophila breviligulata / American Beachgrass
- Andropogon virginicus / Broomsedge Bluestem
- Carex pensylvanica / Pennsylvania Sedge
- Carex stricta / Tussock Sedge
- Danthonia spicata / Poverty Oatgrass
- Dennstaedtia punctilobula / Hay-scented Fern
- Doellingeria umbellata / Flat-topped Aster
- Echinacea purpurea / Coneflower
- Elymus virginicus / Virginia Wild Rye
- Festuca rubra / Red Fescue 305
- Gaultheria procumbens / Wintergreen
- Helenium autumnale / Sneezeweed
- Iris versicolor / Blue Flag
- Juncus greenei / Greene's Rush
- Maianthemum canadense / Canada Mayflower
- Osmundastrum cinnamomeum / Cinnamon Fern
- Panicum virgatum / Switch Grass
- Panicum virgatum 'Cape Breeze' / Cape Breeze Switch Grass
- Penstemon hirsutus / Hairy Beardtongue
- Polystichum acrostichoides / Christmas Fern
- Schizachyrium scoparium / Little Bluestem
- Solidago bicolor / White Goldenrod
- Symphyotrichum ericoides / Heath Aster
- Symphyotrichum novae-angliae / New England Aster
- Symphyotrichum novi-belgii / New York Aster

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

LAND-USE PERMIT SET

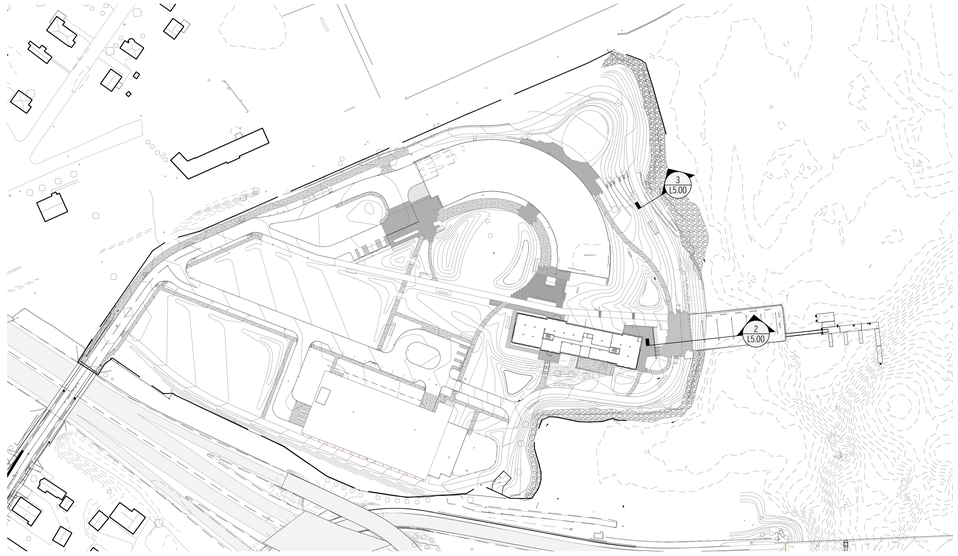
Number	Revision	Date

Stamp

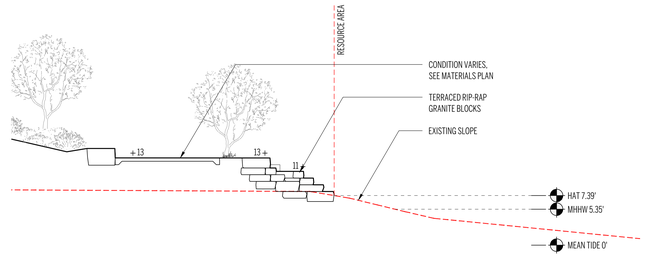
Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	ZH SK JC MS Checked STIMSON
Date	22 MARCH 2024
Scale	as noted

Drawing Title
Plant Schedules and Planting Details

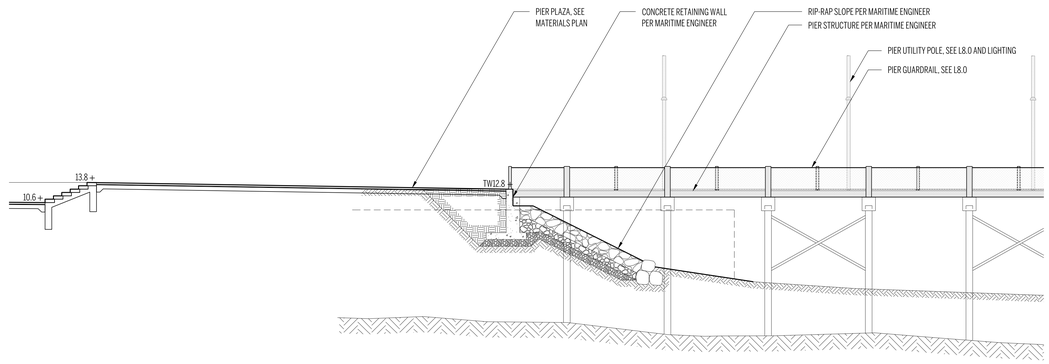
L4.02



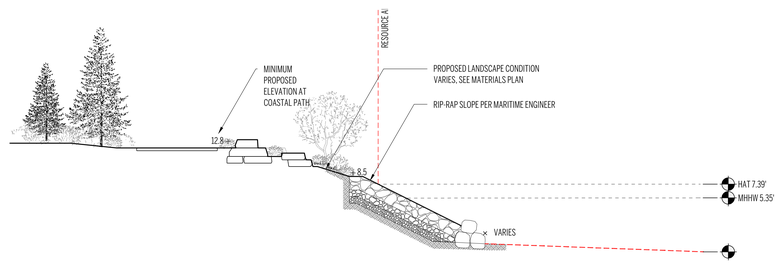
KEY PLAN
1"=100'



3 SECTION AT TERRACED RIP-RAP
1/8" = 1'-0"



2 SECTION AT PIER INTERFACE
1/8" = 1'-0"



1 TYPICAL SECTION AT SHORLINE
1/8" = 1'-0"

0 5' 10' 20' N

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Cambridge, MA 02138
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LAND-USE PERMIT SET

Number	Revision	Date

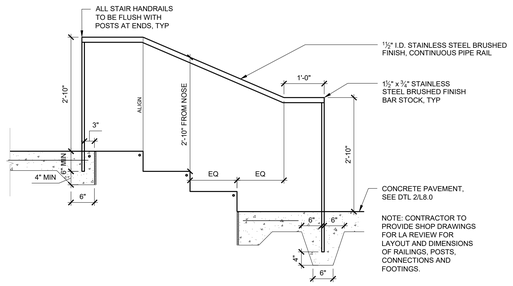
LICENSED LANDSCAPE ARCHITECT
STEPHEN C. STIMSON
No. 3916
STATE OF MAINE

Stamp

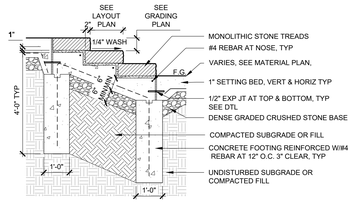
Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	ZH SK JC MS
Checked	STIMSON
Date	22 MARCH 2024
Scale	AS NOTED

Drawing Title
--- Site Sections

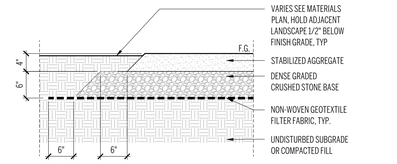
L5.00



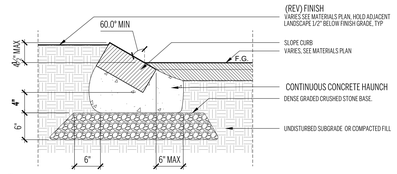
18 STAINLESS STEEL HANDRAIL WITH INTEGRATED LIGHTING
3/4" = 1'-0"



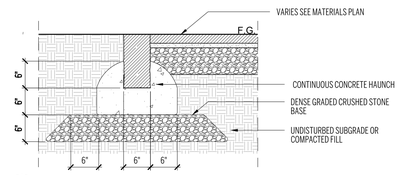
17 MONOLITHIC GRANITE STAIRS ON CONCRETE FOUNDATION
1/2" = 1'-0"



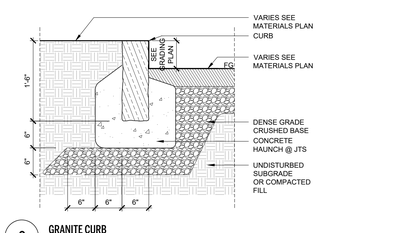
13 DECOMPOSED GRANITE PAVING
1" = 1'-0"



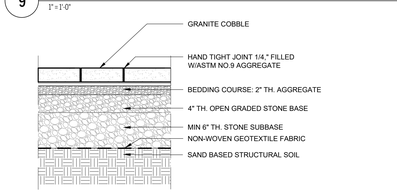
12 GRANITE CURB - MOUNTABLE
1" = 1'-0"



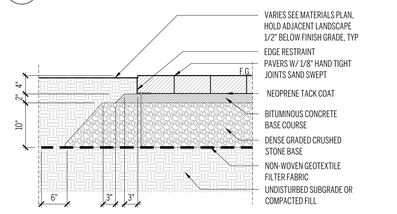
11 GRANITE CURB - FLUSH
1" = 1'-0"



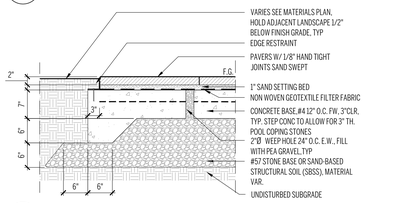
9 GRANITE CURB
1" = 1'-0"



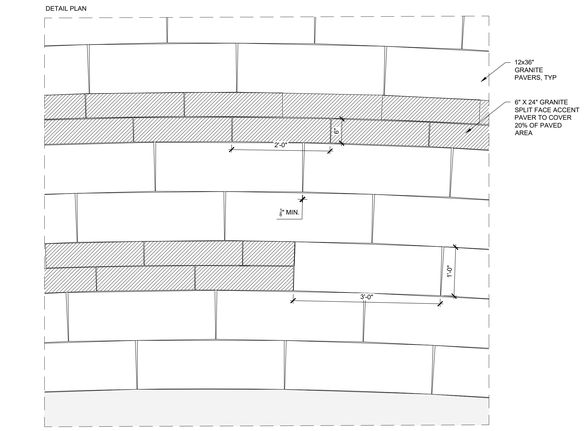
8 GRANITE COBBLE AT TREE PITS
1" = 1'-0"

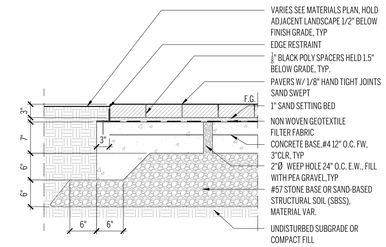


7 PRECAST CONCRETE PAVERS/COBBLESTONE
1" = 1'-0"

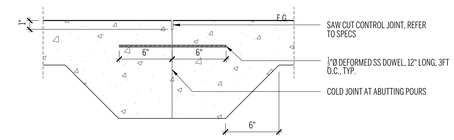


6 GRANITE PAVERS - PEDESTRIAN
1" = 1'-0"

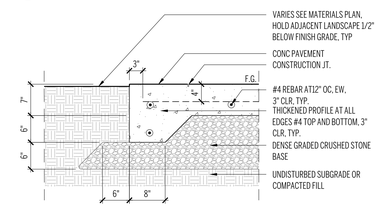




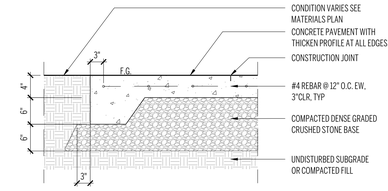
5 GRANITE PAVERS - VEHICULAR
1" = 1'-0"



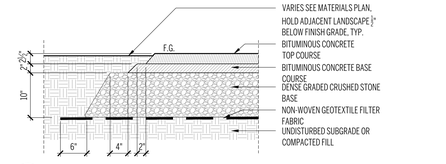
4 CONCRETE CONSTRUCTION JOINT
2" = 1'-0"



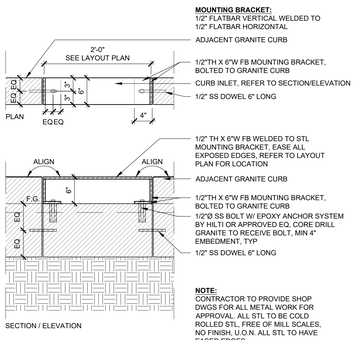
3 CONCRETE PAVEMENT - VEHICULAR
1" = 1'-0"



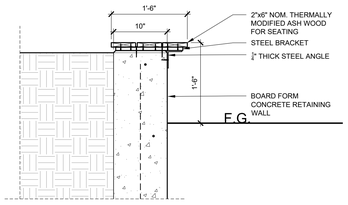
2 CONCRETE PAVEMENT - PEDESTRIAN
1" = 1'-0"



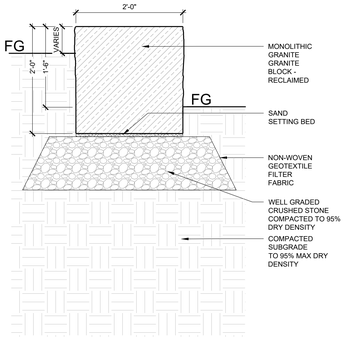
1 ASPHALT PAVING - VEHICULAR
1" = 1'-0"



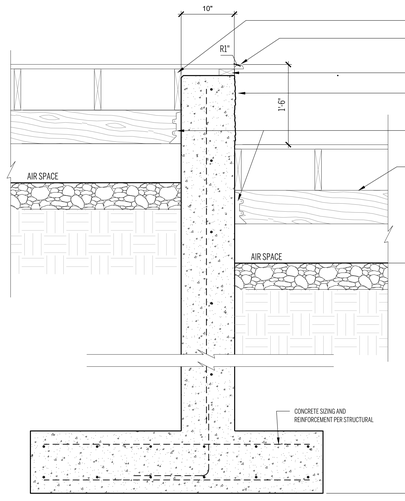
21 STEEL CURB INLET
1" = 1'-0"



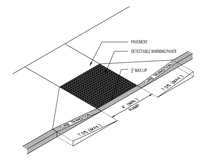
20 CONCRETE RETAINING WALL WITH WOOD CAP
NTS



19 MONOLITHIC STONE WALL ON DENSE GRADED CRUSHED STONE BASE
1" = 1'-0"

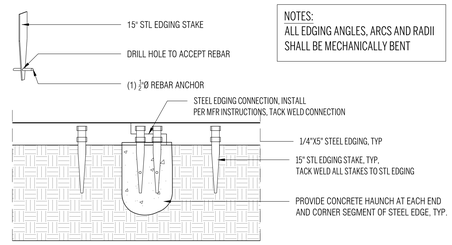


16 WOOD DECK AT TERRACED LANDSCAPE
NTS



1. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5 (1% min).
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE CURB RAMPS SHALL BE 7.5%.
4. A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. RAMP, CURB, AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
7. TYPICAL SIDEWALK SECTION FOR RAMP SECTION CONSTRUCTION.
8. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
9. ELIMINATE CURBING AT RAMP WHERE IT ABUTS ROADWAY, EXCEPT WHERE VERTICAL CURBING IS INDICATED ON THE DRAWINGS TO BE SET FLUSH.
10. DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES.
11. DETECTABLE WARNINGS SHALL BE INSTALLED PERPENDICULAR TO THE ACCESSIBLE ROUTE.

15 ADA RAMP
NTS



NOTES:
ALL EDGING ANGLES, ARCS AND RADII SHALL BE MECHANICALLY BENT

14 STEEL EDGING
1" = 1'-0"

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LAND-USE PERMIT SET

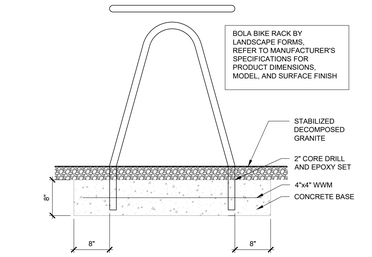
Number	Revision	Date

REGISTERED LANDSCAPE ARCHITECT STEPHEN C. STIMSON No. 3916 STATE OF MAINE

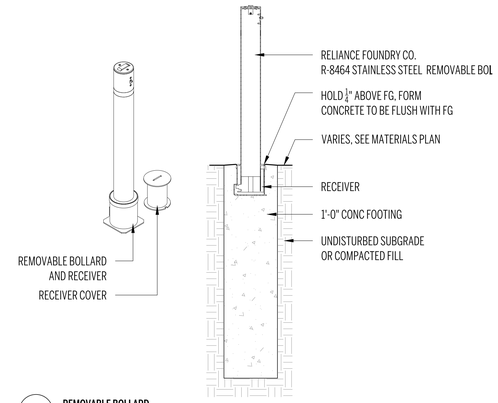
Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	ZH SK JC MS Checked STIMSON
Date	22 MARCH 2024
Scale	AS NOTED
Drawing Title	--- Site Details

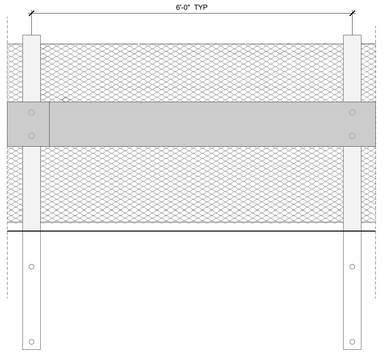
L6.00



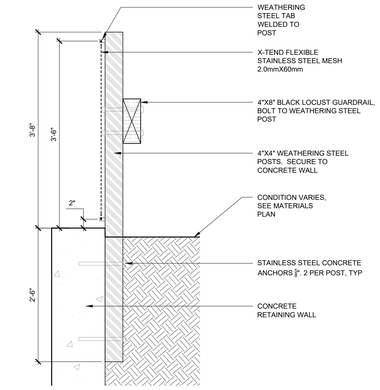
5 **BIKE RACK**
1" = 1'-0"



4 **REMOVABLE BOLLARD**
1" = 1'-0"

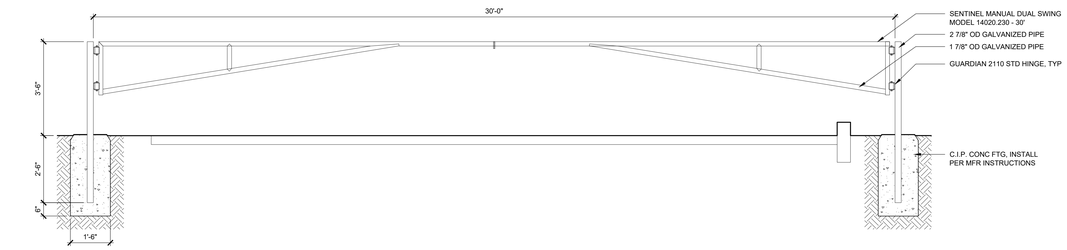


ELEVATION

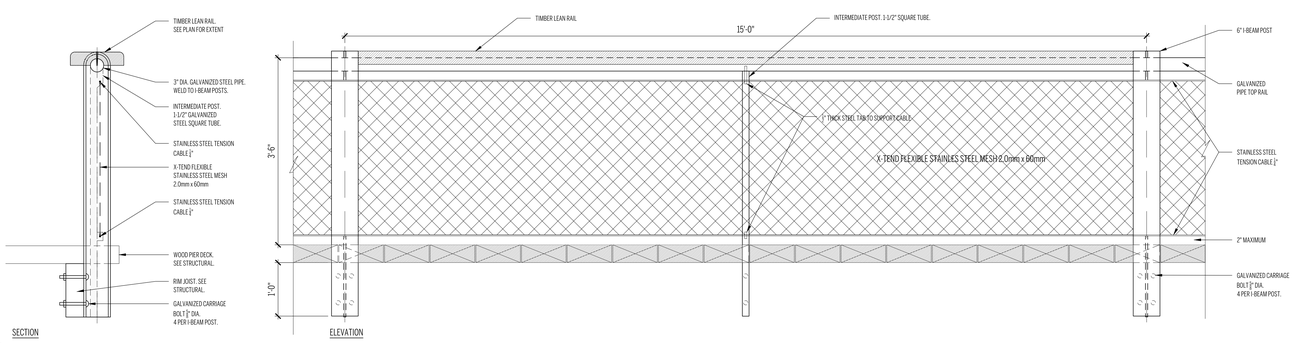


SECTION

3 **TIMBER GUARDRAIL**
1" = 1'-0"



7 **VEHICULAR GATE**
1/2" = 1'-0"

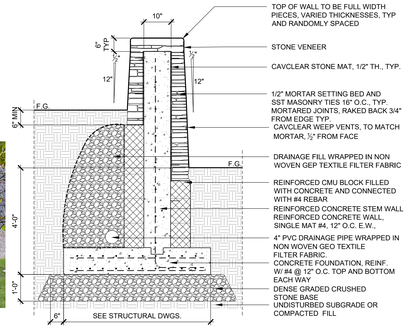


6 **PIER GUARDRAIL**
1" = 1'-0"

REINFORCING CHART		
HR	L	VERTICAL REINF.
8'-10"	7'-0"	#6@6" O.C.
6'-8"	6'-0"	#6@12" O.C.



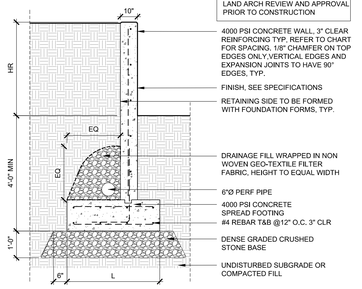
GRANITE VENEER MASONRY PRECEDENT



2 **CONCRETE RETAINING WALL WITH STONE VENEER**
1/2" = 1'-0"

REINFORCING CHART		
HR	L	VERTICAL REINF.
8'-10"	7'-0"	#6@6" O.C.
6'-8"	6'-0"	#6@12" O.C.

NOTE: CONTRACTOR TO PROVIDE SHOP DRAWINGS SHOWING FORM DIMENSIONS, TIE HOLE LOCATIONS, STEEL, AND WALL DIMENSIONS FOR LAND ARCH REVIEW AND APPROVAL PRIOR TO CONSTRUCTION



1 **ARCHITECTURAL CONCRETE RETAINING WALL**
NTS

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STATE OF MAINE

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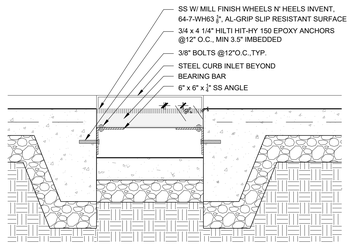
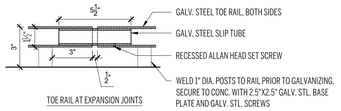
L6.01



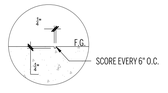
METAL GRATE BRIDGE PRECEDENT



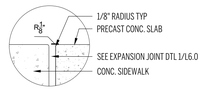
3 **METAL GRATE BRIDGE - PEDESTRIAN**
1" = 1'-0"



TOE RAIL AT EXPANSION JOINTS

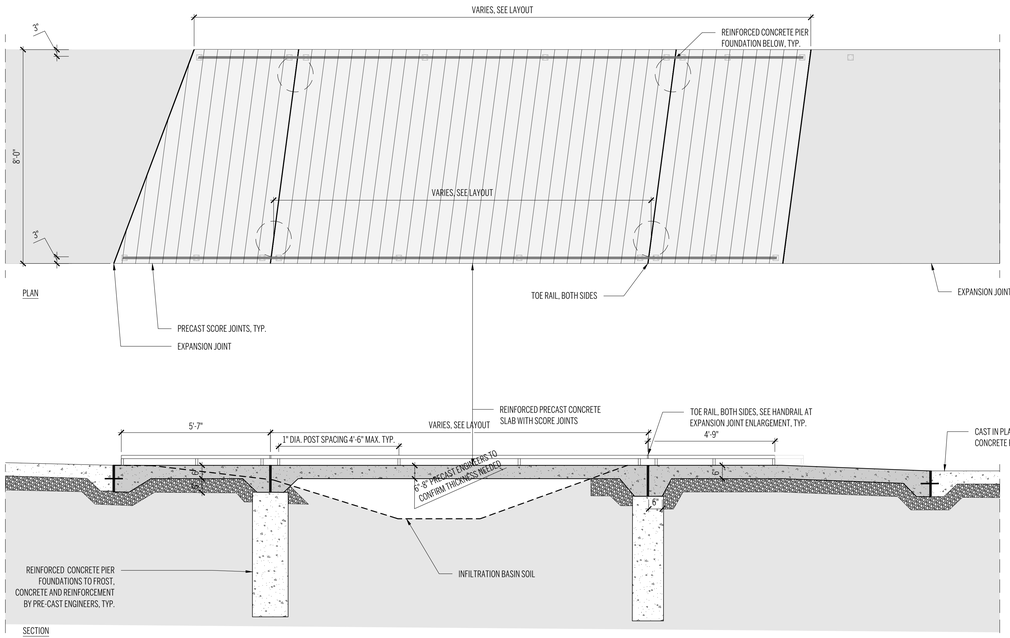


PRECAST SCORE JOINT

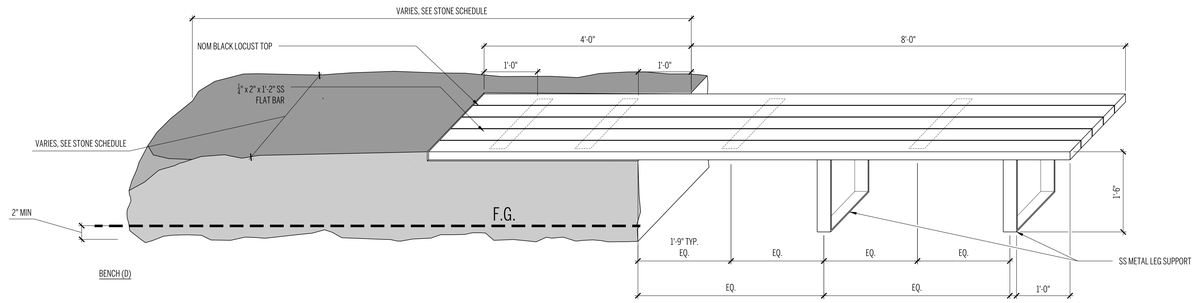


EXPANSION JOINT

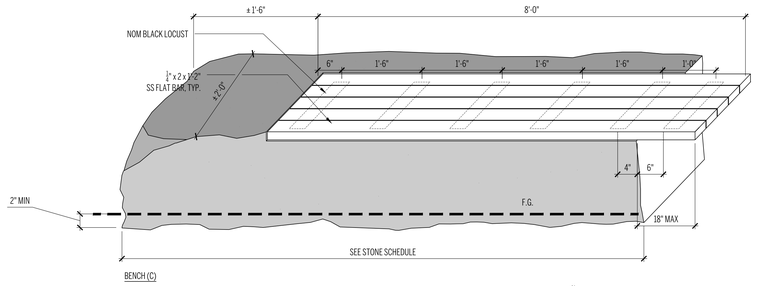
SECTION: HANDRAIL AT EXPANSION JOINTS TYP.
SCALE: 3"=1'-0"



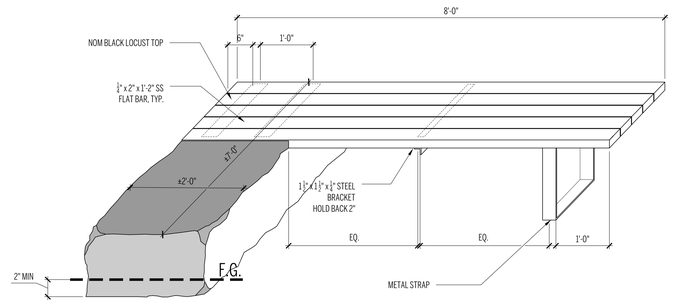
2 **CAST CONCRETE BRIDGE - PEDESTRIAN**
1/2" = 1'-0"



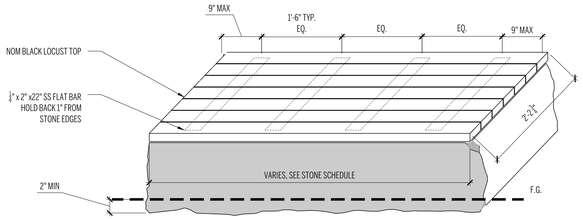
BENCH (D)



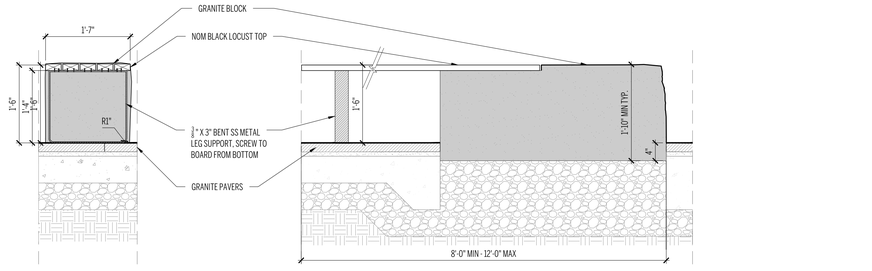
BENCH (C)

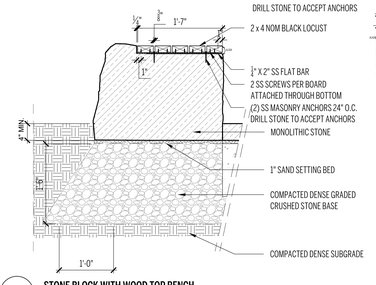


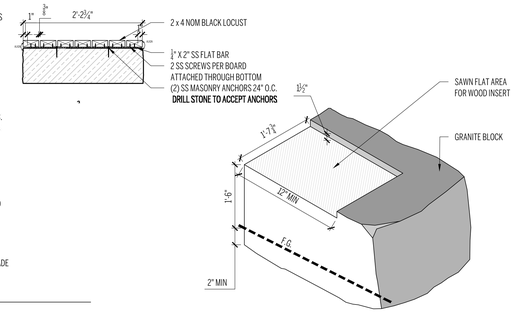
BENCH (B)



BENCH (A)







1 **STONE BLOCK WITH WOOD TOP BENCH**
1" = 1'-0"

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LAND-USE PERMIT SET

Number	Revision	Date

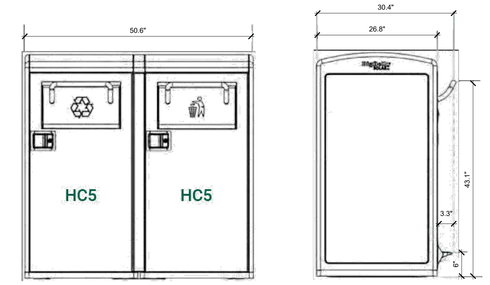
LICENSED LANDSCAPE ARCHITECT STEPHEN C. STIMSON No. 3916 STATE OF MAINE

Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	ZH SK JC MS Checked STIMSON
Date	22 MARCH 2024
Scale	AS NOTED

Drawing Title
--- Site Details

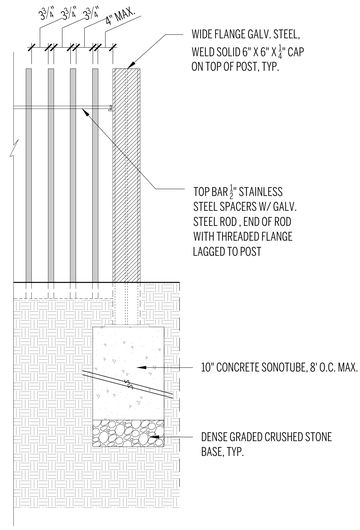
L6.02



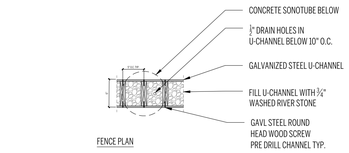
HC5/HC5 Double Station
Approximately 540 lbs (245 kg)

CleanCUBE BY ECUBE.
-120L CAPACITY, SOLAR POWERED
-FOOT PEDAL OPERATED. SEE SPECS

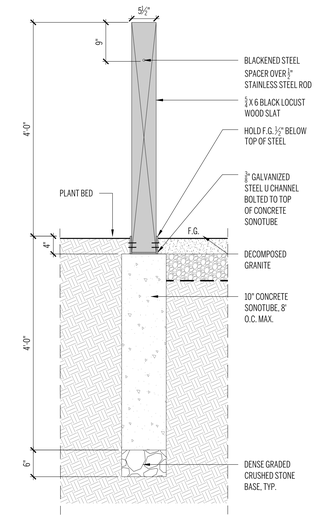
9 **CLEAN CUBE TRASH COMPACTER (WR)**
1" = 1'-0"



FENCE SECTION AT POST

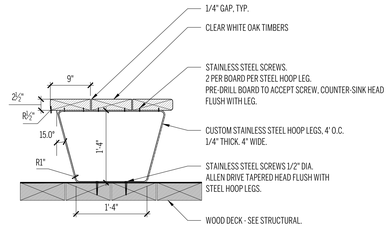


FENCE PLAN

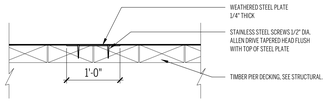


FENCE SECTION

3 **WOODEN SLAT FENCE AT PLAYGROUND**
1" = 1'-0"



2 **RECLAIMED LUMBER BENCH AT PIER**
1" = 1'-0"



1 **WEATHERING STEEL BAND AT PIER DECK**
1" = 1'-0"

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Number	Revision	Date

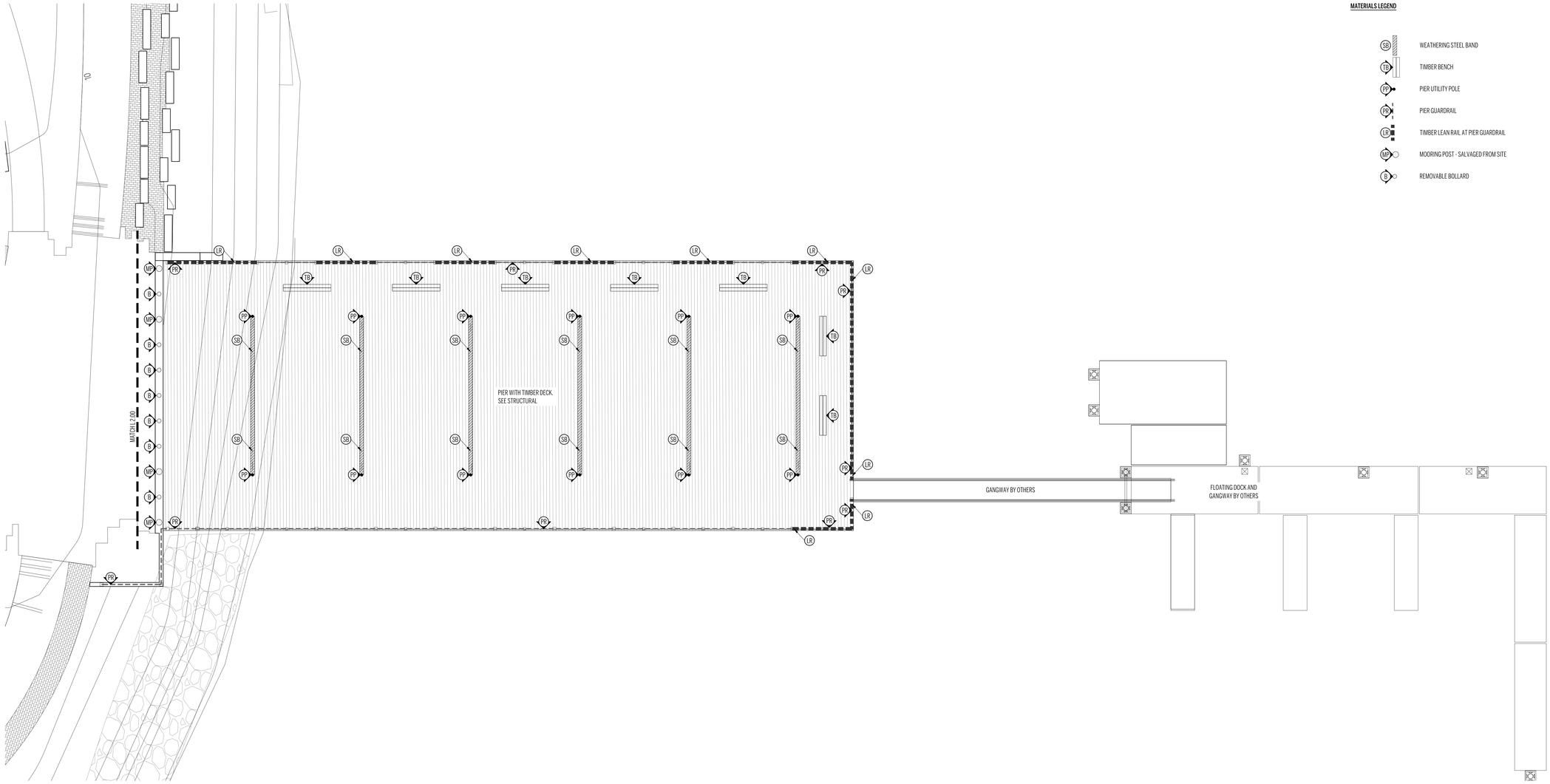
REGISTERED LANDSCAPE ARCHITECT
STEPHEN C. STIMSON
No. 3916
STATE OF MAINE

Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	ZH SK JC MS
Checked	STIMSON
Date	22 MARCH 2024
Scale	AS NOTED

Drawing Title
--- Site Details

L6.03



MATERIALS LEGEND

SB	WEATHERING STEEL BAND	1 / L6.03
TB	TIMBER BENCH	2 / L6.03
PP	PIER UTILITY POLE	SEE LIGHTING
PR	PIER GUARDRAIL	6 / L6.01
LR	TIMBER LEAN RAIL AT PIER GUARDRAIL	6 / L6.01
MP	MOORING POST - SALVAGED FROM SITE	
B	REMOVABLE BOLLARD	4 / L6.01

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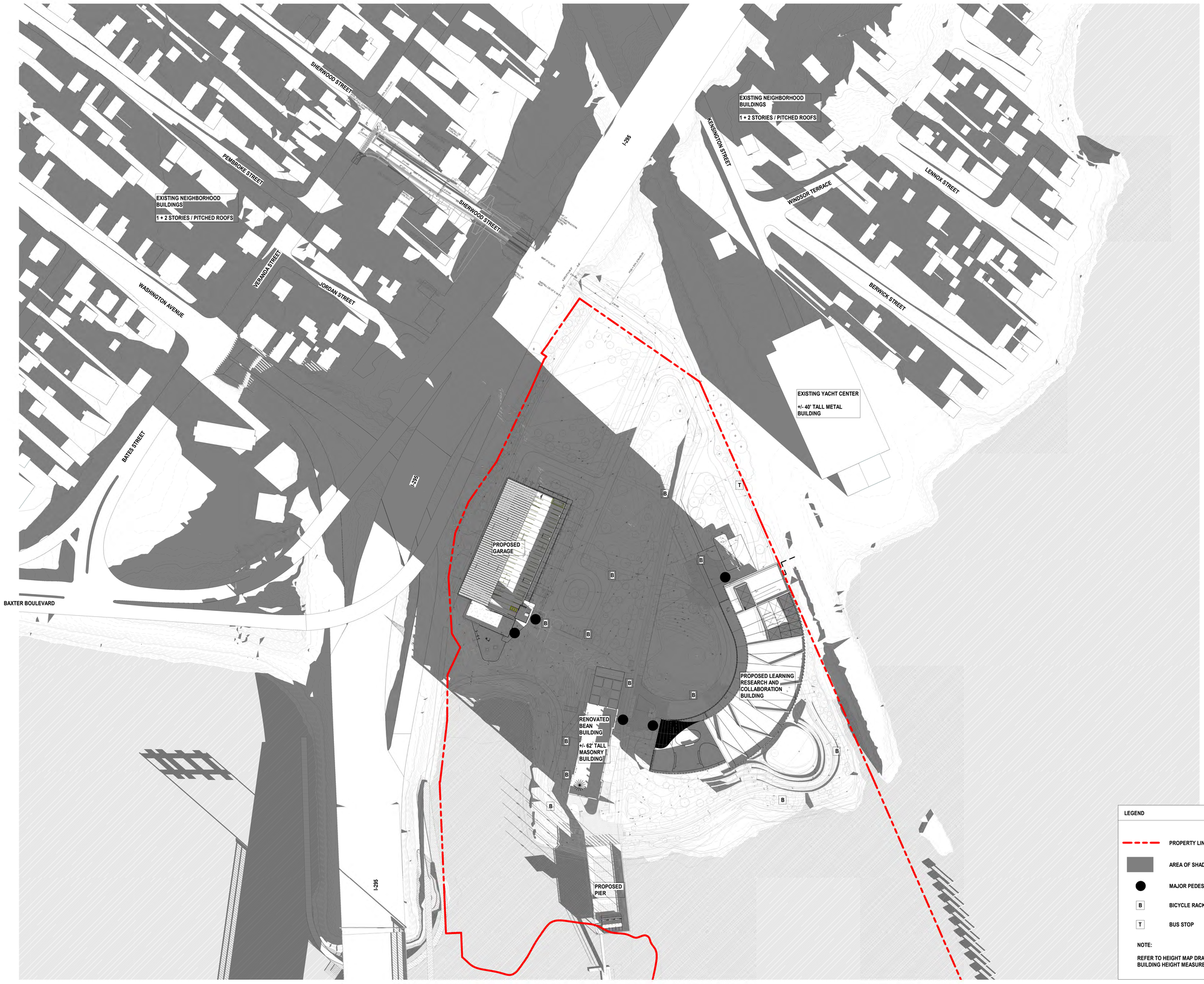
Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	ZH SK JC MS
Checked	STIMSON
Date	22 MARCH 2024
Scale	1" = 10'

Drawing Title
Pier Plan

L8.00



1 SHADOW STUDY - DECEMBER 21st - 9am
1/64" = 1'-0"

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Project	IDEALS - THE ROUX INSTITUTE
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Scale	As indicated

Drawing Title
SHADOW STUDY - DECEMBER 21 - 9AM

AS60.01

10/27/2023 3:12:45 PM



1 SHADOW STUDY - DECEMBER 21st - Noon
1/64" = 1'-0"

10/27/2023 3:13:54 PM

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Drawing Title
SHADOW STUDY - DECEMBER 21 - NOON

AS60.02



1 SHADOW STUDY - DECEMBER 21st - 3pm
1/64" = 1'-0"

10/27/2023 3:15:16 PM

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Date	27 OCTOBER 2023
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Drawing Title
SHADOW STUDY - DECEMBER 21 - 3PM

AS60.03



1 SHADOW STUDY - MARCH 21st - 9am
1/64" = 1'-0"

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Scale	As indicated

Drawing Title
SHADOW STUDY - MARCH 21 - 9AM

AS60.04

10/27/2023 3:16:33 PM



1 SHADOW STUDY - MARCH 21st - Noon
1/64" = 1'-0"

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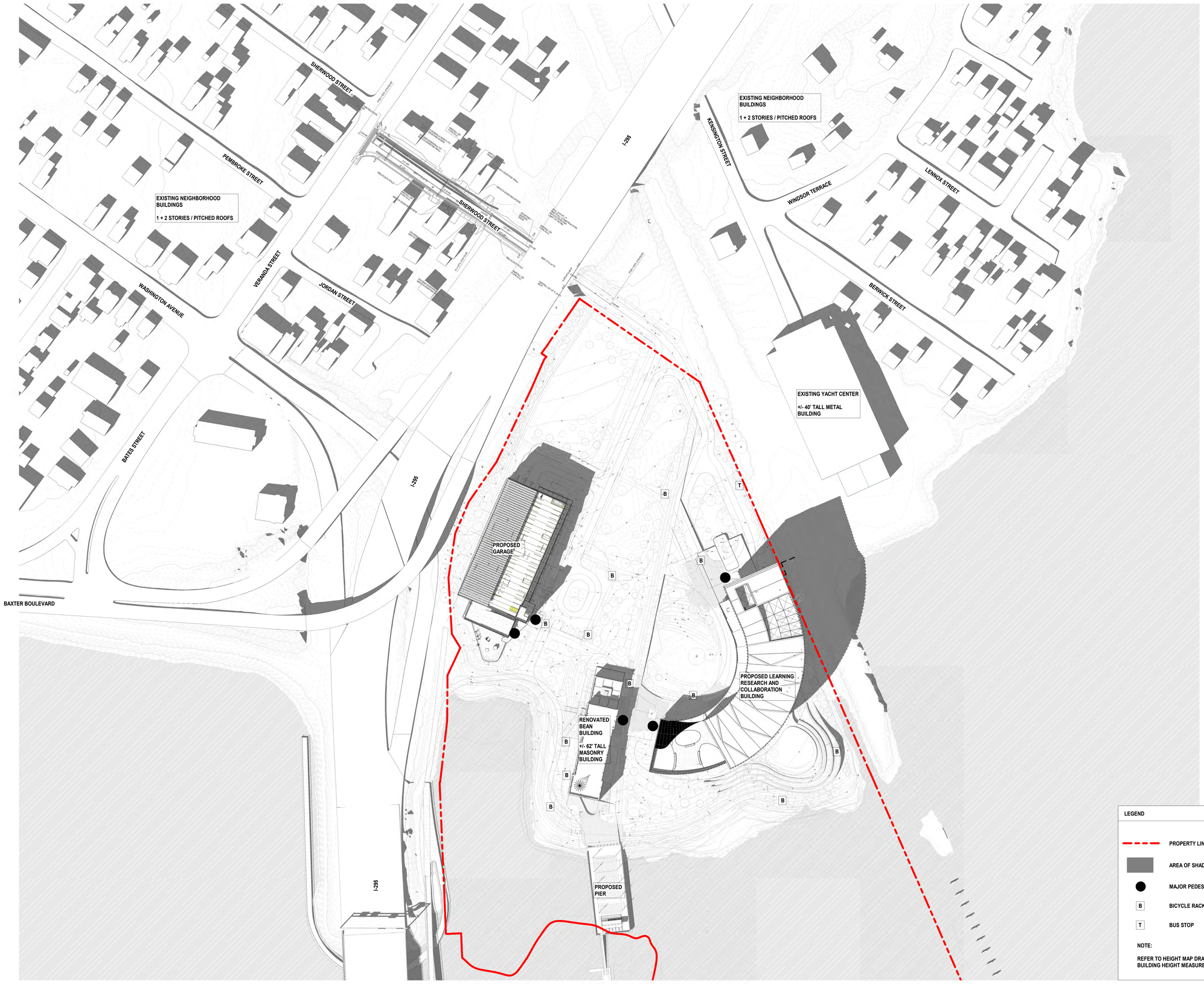
Drawing Title
SHADOW STUDY - MARCH 21 - NOON

AS60.05

10/27/2023 3:17:43 PM



1 SHADOW STUDY - MARCH 21st - 3pm
1/64" = 1'-0"

10/27/2023 3:18:53 PM

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Drawing Title
SHADOW STUDY - MARCH 21 - 3PM

AS60.06



1 SHADOW STUDY - JUNE 21st - 9am
1/64" = 1'-0"

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Scale	As indicated

Drawing Title
SHADOW STUDY - JUNE 21 - 9AM

AS60.07

10/27/2023 3:20:00 PM



1 SHADOW STUDY - JUNE 21st - Noon
1/64" = 1'-0"

10/27/2023 3:21:09 PM

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Scale	As indicated

Drawing Title
SHADOW STUDY - JUNE 21 - NOON

AS60.08



1 SHADOW STUDY - JUNE 21st - 3pm
1/64" = 1'-0"

10/27/2023 3:22:17 PM

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Project	IDEALS - THE ROUX INSTITUTE
Drawn By	JB Checked CM
Date	27 OCTOBER 2023
Scale	As indicated

Drawing Title
SHADOW STUDY - JUNE 21 - 3PM

AS60.09



1 SHADOW STUDY - AUGUST 21st - 9am
1/64" = 1'-0"

10/27/2023 3:23:25 PM

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Drawn By	JB
Checked	CM
Date	27 OCTOBER 2023
Scale	As indicated

Drawing Title
SHADOW STUDY - AUGUST 21 - 9AM

AS60.10



1 SHADOW STUDY - AUGUST 21st - Noon
1/64" = 1'-0"

10/27/2023 3:24:34 PM

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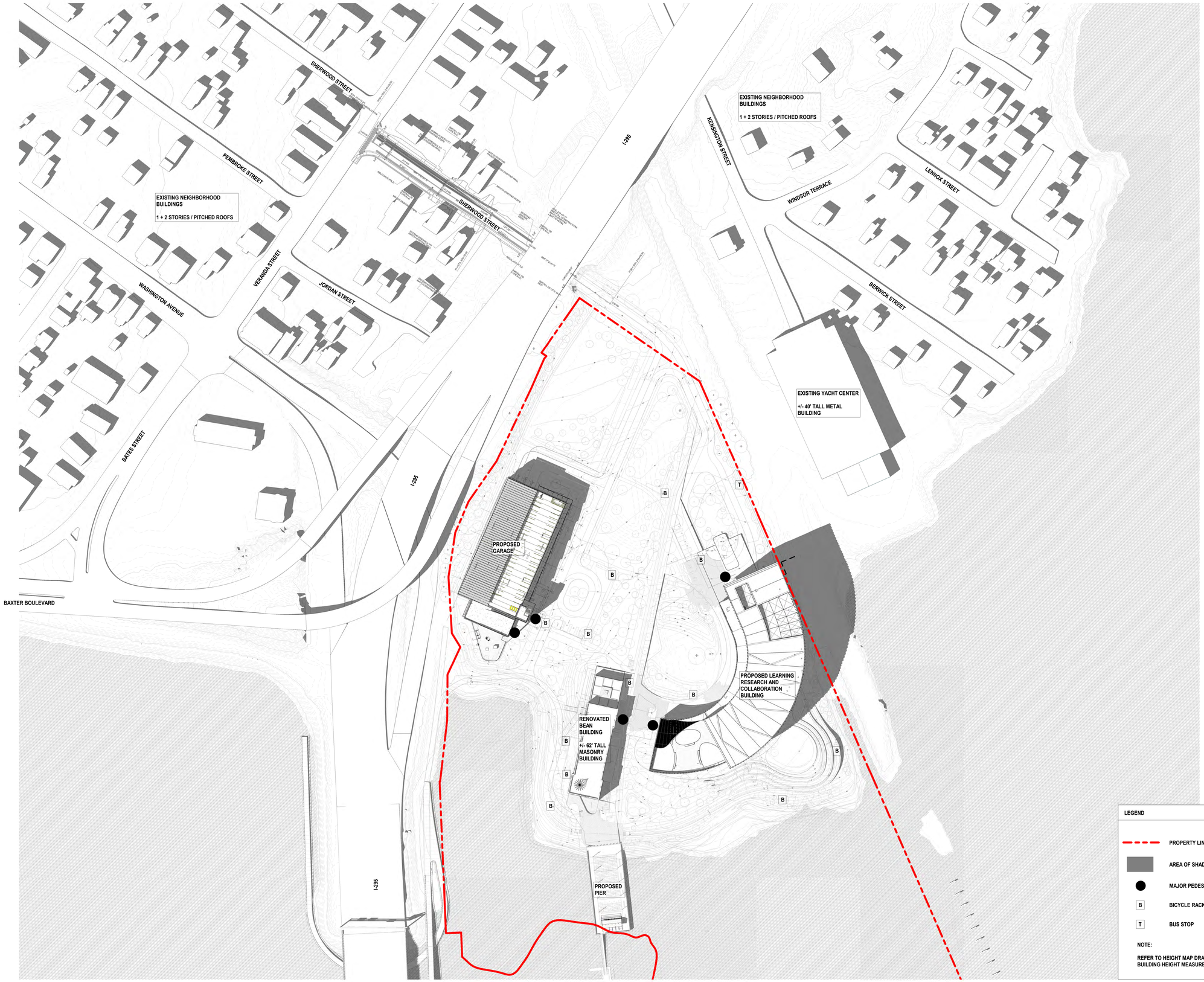
Drawn By	JB
Checked	CM
Date	27 OCTOBER 2023
Scale	As indicated

Drawing Title
SHADOW STUDY - AUGUST 21 - NOON

AS60.11



1 SHADOW STUDY - AUGUST 21st - 3pm
1/64" = 1'-0"

10/27/2023 3:25:44 PM

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No. 3838
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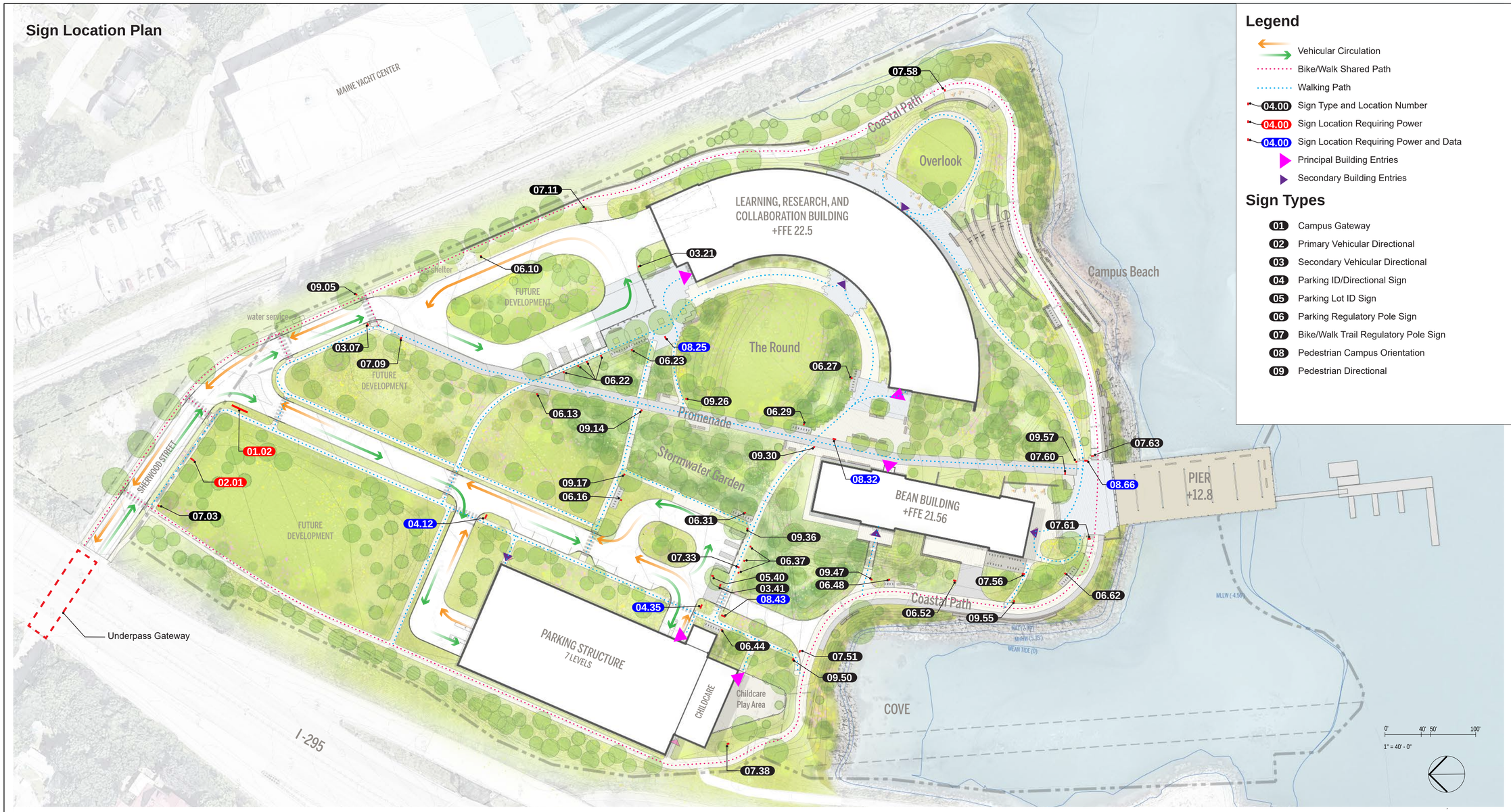
Project	IDEALS - THE ROUX INSTITUTE
Drawn By	JB Checked CM
Date	27 OCTOBER 2023
Scale	As indicated

Drawing Title
SHADOW STUDY - AUGUST 21 - 3PM

AS60.12

Sign Location Plan



Legend

- Vehicular Circulation
- Bike/Walk Shared Path
- Walking Path
- 04.00 Sign Type and Location Number
- 04.00 Sign Location Requiring Power
- 04.00 Sign Location Requiring Power and Data
- Principal Building Entries
- Secondary Building Entries

Sign Types

- 01 Campus Gateway
- 02 Primary Vehicular Directional
- 03 Secondary Vehicular Directional
- 04 Parking ID/Directional Sign
- 05 Parking Lot ID Sign
- 06 Parking Regulatory Pole Sign
- 07 Bike/Walk Trail Regulatory Pole Sign
- 08 Pedestrian Campus Orientation
- 09 Pedestrian Directional

Sign Message Schedule

Sign Type	Loc. No.	Quantity	Sign Legend	Notes
1T	#$	$	%( ) *+ -. /*+002 3 +45(6 '4 789': ; <0!=> ?! @A ! A'; -@ BD<DX2 3 D5DL)' -E%F&,G19 7;5:* 78'# ;. <0!=> ?! @A ! A'; H9N4 5Q) H(;C)0 %( ) 7', -. /*+002 3 H56 /8I JKC L;05;(5* &@ C1$[E#*MN -Q 'D<DX2 3 D5DL) 7;5:* 78'# ;. H9N4 5Q) H(;C)0	< 18G|F &'(\(
1S	#"	$	JP. *D!; 13 QB!)*@IKT8 :CEQ 5G5*!1@@5I -QU:' ; ^ A)01 -E' +((I ! I 3	< 18G|F &'(\(
1S	#T	$	%( ) *+ -@ BD<DX2 3-7'L\ %F6 GI@ H15I G9 7'L\ *QD59 %( ) 7', -V 5$77'L\ %F6 GI@ H15I G9 7'L\ *QD59	
1M	#N	$	%( ) *+ -. /*+002 3 7'L\ %F6 GI@ H15I G9 7'L\ *QD59 %( ) 7', -V 5$77'L\ %F6 GI@ QB!)*@IKK R! -D'E(H5! 41'75F E!) 0	< 18G|F &'(\(
1T	#S	$	-. /*+002 3 +45(6 '4 789': ; <0!=> ?! @A ! A'; %( ) 7', H56 /8I JKC L;05;(5* &@ C1$[E#*MN	&':9)*&'(\(
1S	#M	$	%( ) *+ -V 5$77'L\ %F6 GI@ V 59U W80 7'L\ %( ) 7', -. /*+0D2 3-7'L\ %F6 GI@ H15I G9 7'L\ *QD59	< 18G|F &'(\(

Sign Type	Loc. No.	Quantity	Sign Legend	Notes
1X	#$!	$	-D-\ 5Q !D(E1!0$. ("Y) !2H"7$! *. !5/ B4! Z Q2#$E1$"H1:(` C!: Q<*- 3	&':9)*&'(\(
1S	#&S	$	%( ) *+ -. /*+0D2 3-7'L\ %F6 GI@ H15I G9 7'L\ *QD59 %( ) 7', -. /*+0D2 3-7'L\ %F6 GI@ H15I G9 7'L\ *QD59	< 18G|F &'(\(
1[	#$*	$	%( ) *+ -@ BD<DX2 3-E'&F6 GI@ L'1 'D!E5GJ! ; -. / *+0D2 3 H9N4 5Q*!H(;C)0 7;5:* 78'# ;. <0!=> ?! @A ! A'; %( ) 7', -D 'D<DX2 3-E'&F6 GI@ L'1 'D!E5GJ! ; -. / *+0D2 3 H56 /8I JKC L;05;(5* &@ C1$[E#*MN	< 18G|F &'(\(
1X	#&T	$	-7'L\ *E5GJ! ; *&F6 GI@ -@ ; 8I&D3(F*Q; K33'Q *<) Q:8! ') (3	&':9)*&'(\(
1M	#&[	$	%( ) *+ -. / *+002 3 +45(6 '4 789': ; -Q 'D<DX2 3 H15I G9 7'L\ *QD59 -@ BD<DX2 3 H15I G9 7'L\ *QD59 -Q 'D<DX2 3-7'L\ %F6 GI@ H15I G9 7'L\ *QD59	< 18G|F &'(\(
1X	#S	$	-7'L\ *E5GJ! ; *&F6 GI@ -@ ; 8I&D3(F*Q; K33'Q *<) Q:8! ') (3	&':9)*&'(\(
1X	#M	$	-7'L\ *E5GJ! ; *&F6 GI@ -@ ; 8I&D3(F*Q; K33'Q *<) Q:8! ') (3	&':9)*&'(\(
1M	#[	$	%( ) *+ -. / *+002 3 +45(6 '4 789': ; -@ BD<DX2 3 H5! 41'75F E!) 0 -Q 'D<DX2 3 H15I G9 7'L\ *QD59 -@ BD<DX2 3 H15I G9 7'L\ *QD59 -Q 'D<DX2 3 7;5:* 78'# ;. H5! 41'75F E!) 0 %( ) 7', -. /*+0023-E&F6 GI@ D!5D;) -@ BD<DX2 3 H15I G9 7'L\ *QD59 -Q 'D<DX2 3 7;5:* 78'# ;. H5! 41'75F E!) 0	< 18G|F &'(\(
1X	#&X	$	-7'L\ *E5GJ! ; *&F6 GI@ -@ ; 8I&D3(F*Q; K33'Q *<) Q:8! ') (3	&':9)*&'(\(
1M	#$S	$	%( ) *+ -. / *+002 3 +45(6 '4 789': ; -@ BD<DX2 3 H5! 41'75F E!) 0 %( ) 7', -. /*+0D2 3-E&F6 GI@ D!5D;) -@ BD<DX2 3 H15I G9 7'L\ *QD59 -Q 'D<DX2 3 H15I G9 7'L\ *QD59 -Q 'D<DX2 3 7;5:* 78'# ;. H5! 41'75F E!) 0	< 18G|F &'(\(
1X	#'$	$	-7'L\ *E5GJ! ; *&F6 GI@ -@ ; 8I&D3(F*Q; K33'Q *<) Q:8! ') (3	&':9)*&'(\(
1[	#T*	$	%( ) *+ -. / *+0D2 3 +45(6 '4 789': ; -@ BD<DX2 3 H56 /8I JKC L;05;(5* &@ C1$[E#*MN -Q 'D<DX2 3-E'&F6 GI@ L'1 'D!E5GJ! ; -. / *+0D2 3 H9N4 5Q*!H(;C)0 %( ) 7', -E!1 Q;'D;D5/ B4! *1D%16 6 8: *$* 7899[! 3	< 18G|F &'(\(

Sign Type	Loc. No.	Quantity	Sign Legend	Notes
1S	#T	$	%( ) *+ -V 5$77'L\ %F6 GI@ V 59U W80 7'L\ %( ) 7', -. /*+0D2 3 H15I G9 7'L\ *QD59 %( ) 7', -. /*+0D2 3 H15I G9 7'L\ *QD59 -Q 'D<DX2 3 H5! 41'75F E!) 0 %( ) 7', -. /*+0D2 3 H9N4 5Q*!H(;C)0	< 18G|F &'(\(
1[	#N	$	%( ) *+ -@ BD<DX2 3'-E'&F6 GI@ L'1 'D!E5GJ! ; H9N4 5Q*!H(;C)0 <0!=> ?!	&':9)*&'(\(
1M	#X	$	%( ) *+ -Q 7'C!$F2 3 +45(6 '4*7 8'# ;. -. / *+0D2 3 7;5:* 78'# ;. %( ) 7', -. /*+0D2 3 H5! 41'75F E!) 0 -Q 7'C!$F2 3 H15I G9 7'L\ *QD59	< 18G|F &'(\(
1X	#S	$	-V 5$77'L\ %F6 GI@ V 59U W80 7'L\ %( ) 7', -E!1 Q;'D;D5/ B4! *1D%16 6 8: *$* 7899[! 3	&':9)*&'(\(
1S	#T	$	%( ) *+ -. / *+002 3 7'L\ %F6 GI@ H15I G9 7'L\ *QD59 %( ) 7', -. /*+002 3 7'L\ %F6 GI@ H15I G9 7'L\ *QD59 -Q 'D<DX2 3 H5! 41'75F E!) 0	< 18G|F &'(\(
1N	#[	$	-5'5 Fd G!@ 7;5:* 78'# ;. &B!1$QD6 D5&J! ;	&':9)*&'(\(
1T	#$	$	-. / *+0D2 3 7;5:* 78'# ;. @A ! A'; &)0A4)*L)$'4)| >. ' 9F	&':9)*&'(\(
1[	#T	$	%( ) *+ -H56 / 8I *> 0) : ⊙C!: 'Y 5/ 3 %( ) 7', -E!1 Q;'D;D5/ B4! *1D%16 6 8: *$* 7899[! 3	< 18G|F &'(\(
1X	#[	$	-7'L\ *E5GJ! ; *&F6 GI@ -@ ; 8I&D3(F*Q; K33'Q *<) Q:8! ') (3	&':9)*&'(\(
1M	#S	$	-@ BD<DX2 7-V 8)) 8E0'5&F6 GI@ D!5D;)' -E'&F6 G19 7;5:* 78'# ;. +-44)) I ! Q@ *E5GBI'Y 5/ 3	&':9)*&'(\(
1X	#[	$	-7'L\ *E5GJ! ; *&F6 GI@ -@ ; 8I&D3(F*Q; K33'Q *<) Q:8! ') (3	&':9)*&'(\(

Sign Type	Loc. No.	Quantity	Sign Legend	Notes
1M	#N'	$	%( ) *+ -. / *+002 3 D5DL)' -E'&F6 G19 7'L\)*.E5GJ!.;* -7'L\)*&F6 G19 %( ) 7', -. /*+002 3 H15I G9 7'L\ *QD59 %( ) 7', -7'L\ *E5GJ! ; -V 5$77'L\ %F6 GI@ V 5$MV80 7'L\ -@@3 -. / *+002 3 7'L\)*E5GJ!.; %( ) 7', -7'L\ *E5GJ! ; -. / *+002 3 H15I G9 7'L\ *QD59	< 18G|F &'(\(
1X	#N"	$	7)5: 7;5:* ; @A ! A';	&':9)*&'(\(
1M	#NN	$	-@ BD<DX2 3'-V 8)) 8E0'5&F6 GI@ 7;5:* 78'# ;. H5! 41'75F E!) 0 +-44)) I ! Q@ *E5GBI'Y 5/ 3	&':9)*&'(\(
1S	#NX	$	%( ) *+ -7'L\ *&F6 GI@ 7'L\ E5GJ!.; %( ) 7', -7'L\ *&F6 GI@ 7'L\ E5GJ!.;	< 18G|F &'(\(
1M	#NS	$	%( ) *+ -. / *+002 3 7;5:* 78'# ;. +45(6 '4*7 8'# ;. D5DL)' -E5GJ!.;* -&F6 G19 -Q 'D<DX2 3 7'L\)*E5GJ!.; -7'L\)*&F6 G19 %( ) 7', -Q 'D<DX2 3 H56 /8I *7)54 B -@ BD<DX2 3 7'L\)*E5GJ!.;* -7'L\)*&F6 G19	< 18G|F &'(\(
1S	#N]	$	%( ) *+ -. / *+003 1 3'7'L\ %F6 GI@ H15I G9 7'L\ *QD59 %( ) 7', -. /*+003 1 3'7'L\ %F6 GI@ H15I G9 7'L\ *QD59	< 18G|F &'(\(
1S	#KI	$	%( ) *+ -V 5$77'L\ %F6 GI@ V 5$MV80 7'L\ -@@3 -Q 'D<DX2 3 -7'L\ %F6GI@ 7'L\)*E5GJ!.; %( ) 7', -@ BD<DX2 3 -7'L\ %F6 GI@ 7'L\)*E5GJ!.;	< 18G|F &'(\(

Sign Type	Loc. No.	Quantity	Sign Legend	Notes
1S	#KS	$	%( ) *+ -V 5$77'L\ %F6 GI@ V 5$MV80 7'L\ -@@3 -. / *+002 3 7'L\)*E5GJ!.; %( ) 7', -7'L\ *&F6 GI@ H15I G9 7'L\ *QD59	< 18G|F &'(\(
1X	#K"	$	-7'L\ *E5GJ! ; *&F6 GI@ -@ ; 8I&D3(F*Q; K33'Q *<) Q:8! ') (3	&':9)*&'(\(
1S	#KT	$	%( ) *+ -V 5$77'L\ %F6 GI@ V 5$MV80 7'L\ -@@3 -. / *+002 3 H56 /8I 7'54 B -@ BD<DX2 3 %( ) 7', -7'L\ %F6 GI@ 7'L\)*E5GJ!.;	< 18G|F &'(\(
1M	#KN	$	-D-\5/ B4! *. ' Q;9 Q C ; *!$\ *5R O;0*1*5$\ E'XVZ*G\)*(;C)06 ';)3	&':9)*&'(\(
1[	#KX	$	%( ) *+ -H56 / 8I *> 0) : ⊙C!: 'Y 5/ 3 %( ) 7', -E!1 Q;'D;D5/ B4! *1D%16 6 8: *$* 7899[! 3	< 18G|F &'(\(
1F	#KS	$	-D-\5/ B4! *. ' Q;9 Q C ; *!$\ *5R O;0*1*5$\ E'XVZ*G\)*(;C)06 ';)3	&':9)*&'(\(

IDEALS Initiative for Digital Engineering and Life Sciences Roux Campus

The Roux Institute

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617 492-7000 Fax 492-7007

Roll Barresi & Associates, Inc.
Signage and Graphics
48 Dunster Street
Cambridge, MA 02138
617 868-5430

LAND-USE PERMIT SET

Number	Revision	Date

Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	AJB Checked SP
Date	27 OCTOBER 2023
Scale	1" = 40' - 0"

Drawing Title

Sign Location Plan and Message Schedule

SG.01

8/22/2023 2:59:29 PM

Word-marks

The Roux Institute
at Northeastern University

Monogram & Word-mark mono (Formal)

The Roux Institute
at Northeastern University

Monogram & Word-mark (Formal)

The Roux Institute
at Northeastern University

Monogram & Word-mark (Formal)

LVX VERITAS VIRTVS
The Roux Institute
at Northeastern University

Monogram & Notched Word-mark mono (Formal)

LVX VERITAS VIRTVS
The Roux Institute

"N" with notched word-mark & motto

The Roux Institute

Roux Institute Word-mark

The Roux

Possible "shorthand" for the campus sub-brand?

Typeface

FF Real Head Pro

Primary Typeface

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789

FF Real Head Pro - Semilight

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789

FF Real Head Pro - Book

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789

FF Real Head Pro - Medium

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789

FF Real Head Pro - Demibold

Colors and Materials

Red
PMS 186C

Warm Gray Metallic
to match Architecture

Granite to match
Site Benches

White
Mathews White

Charcoal Gray
Metallic

Timber to match
Architecture

Black
PMS Black C

Brushed or
Non-Directaional
SST

Gold Metallic
PMS 871C

Brushed or
Non-Directaional
Aluminum

Architecture and Landscape Design



A sweeping view of the LRC



The Mass Timber West Wing



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LAND-USE
PERMIT SET

Number	Revision	Date

Stamp

Job #	2202		
Project	THE ROUX INSTITUTE		
Drawn By	AJB	Checked	SP
Date	27 OCTOBER 2023		
Scale	Not To Scale		

Drawing Title

Graphic Standards

SG.02

8/22/2023 2:59:23 PM

Site Wayfinding System Sign Types

Sign Structures

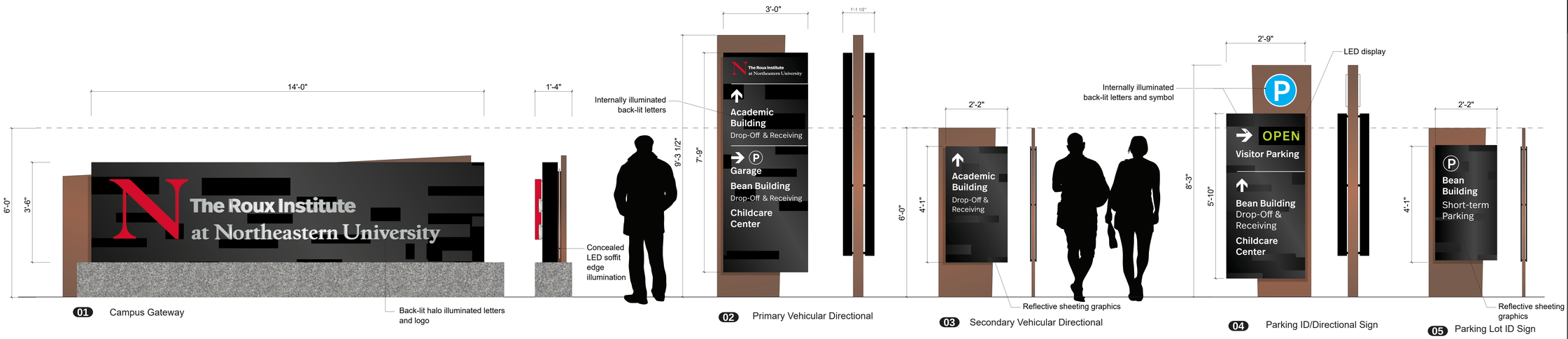
The sign system is comprised of fabricated aluminum panel contruction with durable automotive paint finishes and installed with reinforced concrete footings. Sign Type 01 also incorporates a granit base, to match the granite used in site furnishings.

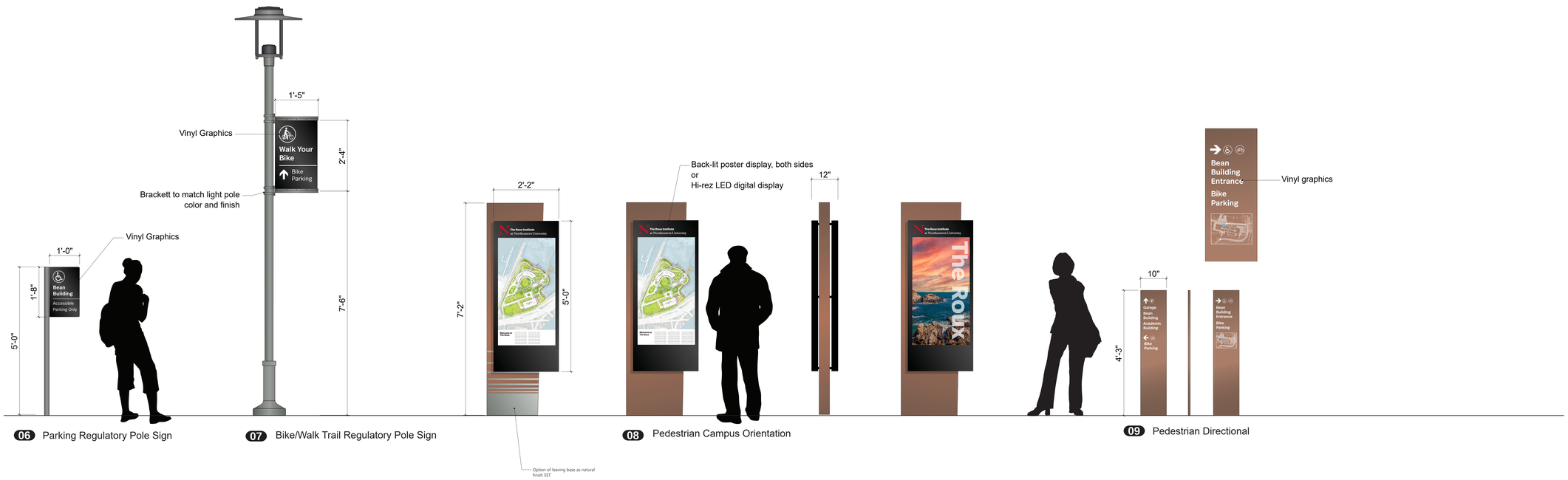
The system is designed to be dissassembled to accomodate change over time and maintenance.

Graphics

Sign Types 01, 02 and 04 have internally illuminated back-lit lettering and graphics wtih augmented edge illumination as noted. Sign Type 08 incorporates a conventional backlit poster display case for the map and information graphics. LED digital displays in place of backlit displays may be explored for ease of update.

All other sign types inorporate reflective or opaque vinyl lettering and graphics.





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LAND-USE PERMIT SET

Number	Revision	Date

Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	AJB
Checked	SB
Date	27 OCTOBER 2023
Scale	3/4" = 1' - 0"

Drawing Title

Site Wayfinding System Sign Types

SG.03

8/22/2023 2:59:23 PM

Underpass Gateway



Northeastern Campus Mural Program



Tommy's Park, Portland, ME



Lafayette College Gateway



Existing Conditions



Northeastern Red Painted Girders



Northeastern Red Painted Girders
with Underpass Mural with Lighting

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LAND-USE
PERMIT SET

Number	Revision	Date

Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	AJB Checked SP
Date	27 OCTOBER 2023
Scale	Not To Scale

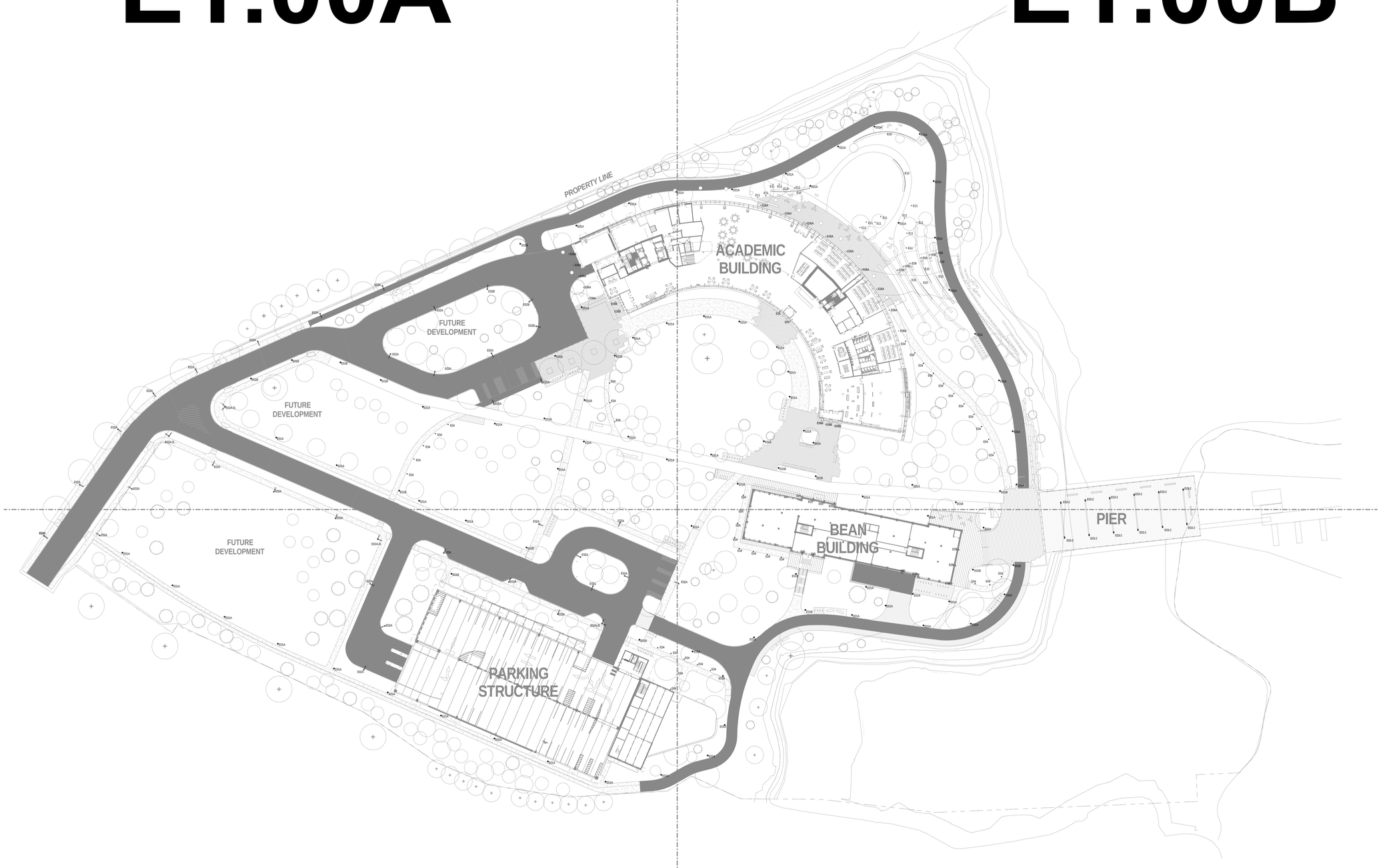
Drawing Title
UNDERPASS
GATEWAY

SG.04

8/22/2023 2:59:29 PM

E1.00A

E1.00B



E1.00D

E1.00C

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SITE PLAN SUBMISSION

Number	Revision	Date

COMMONWEALTH OF MASSACHUSETTS
JULIAN ASTBURY
ELECTRICAL
No. 45459
REGISTERED PROFESSIONAL ENGINEER

10.27.2023

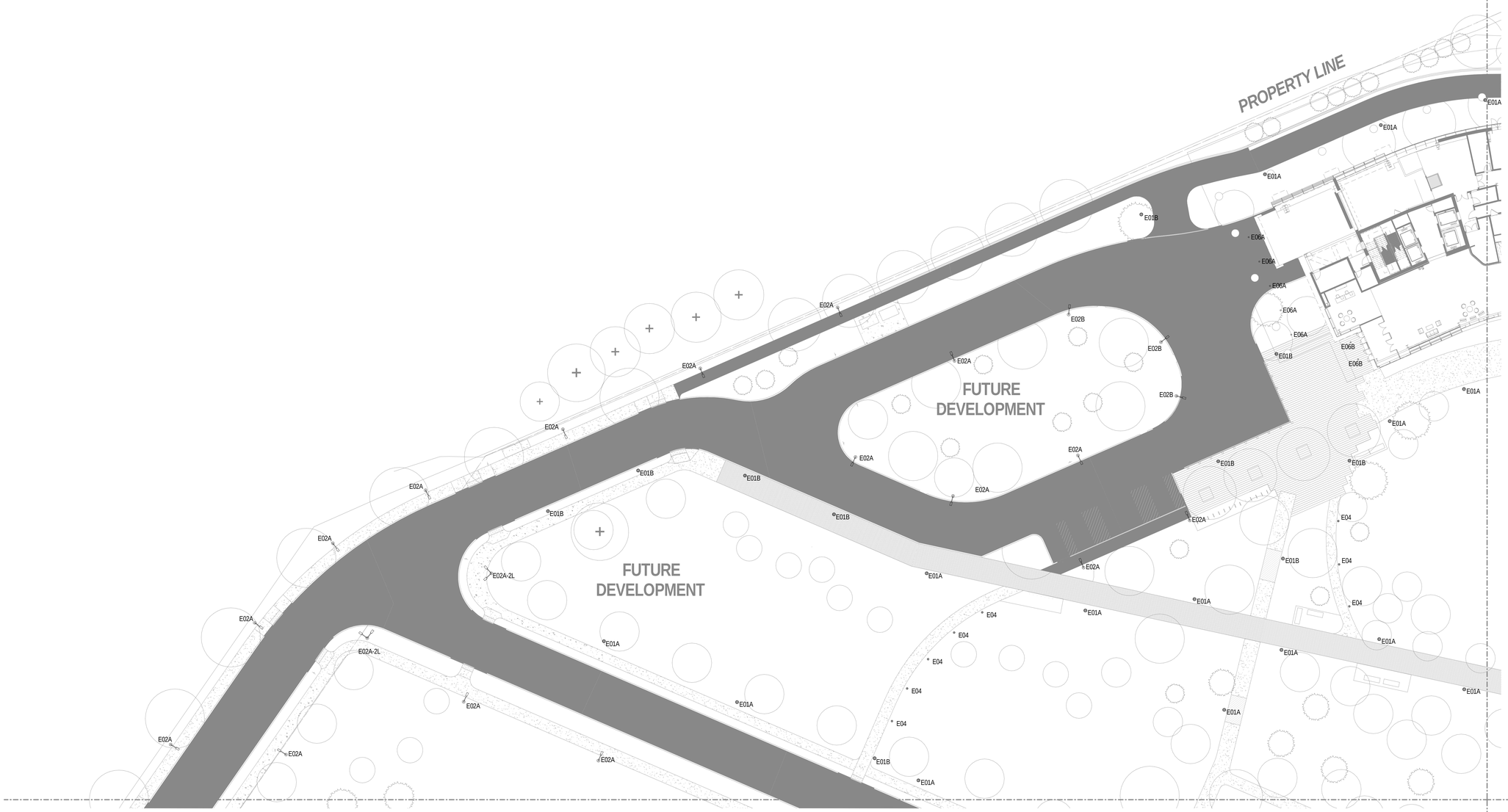
Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS
Checked	JW
Date	27 OCTOBER 2023
Scale	1" = 40'-0"

Drawing Title
SITE LIGHTING KEY PLAN

E1.00

10/27/2023 2:20:42 PM



1 SITE LIGHTING PLAN - PART A
1" = 20'-0"

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10.27.2023

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Project	THE ROUX INSTITUTE
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Date	27 OCTOBER 2023
Scale	1" = 20'-0"

Drawing Title
SITE LIGHTING PLAN - PART A

E1.00A

10/27/2023 2:21:16 PM



1 SITE LIGHTING PLAN - PART B
1" = 20'-0"

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Date	27 OCTOBER 2023
Scale	1" = 20'-0"

Drawing Title
SITE LIGHTING PLAN - PART B

E1.00B

10/27/2023 2:21:18 PM

1 SITE LIGHTING PLAN - PART C
1" = 20'-0"

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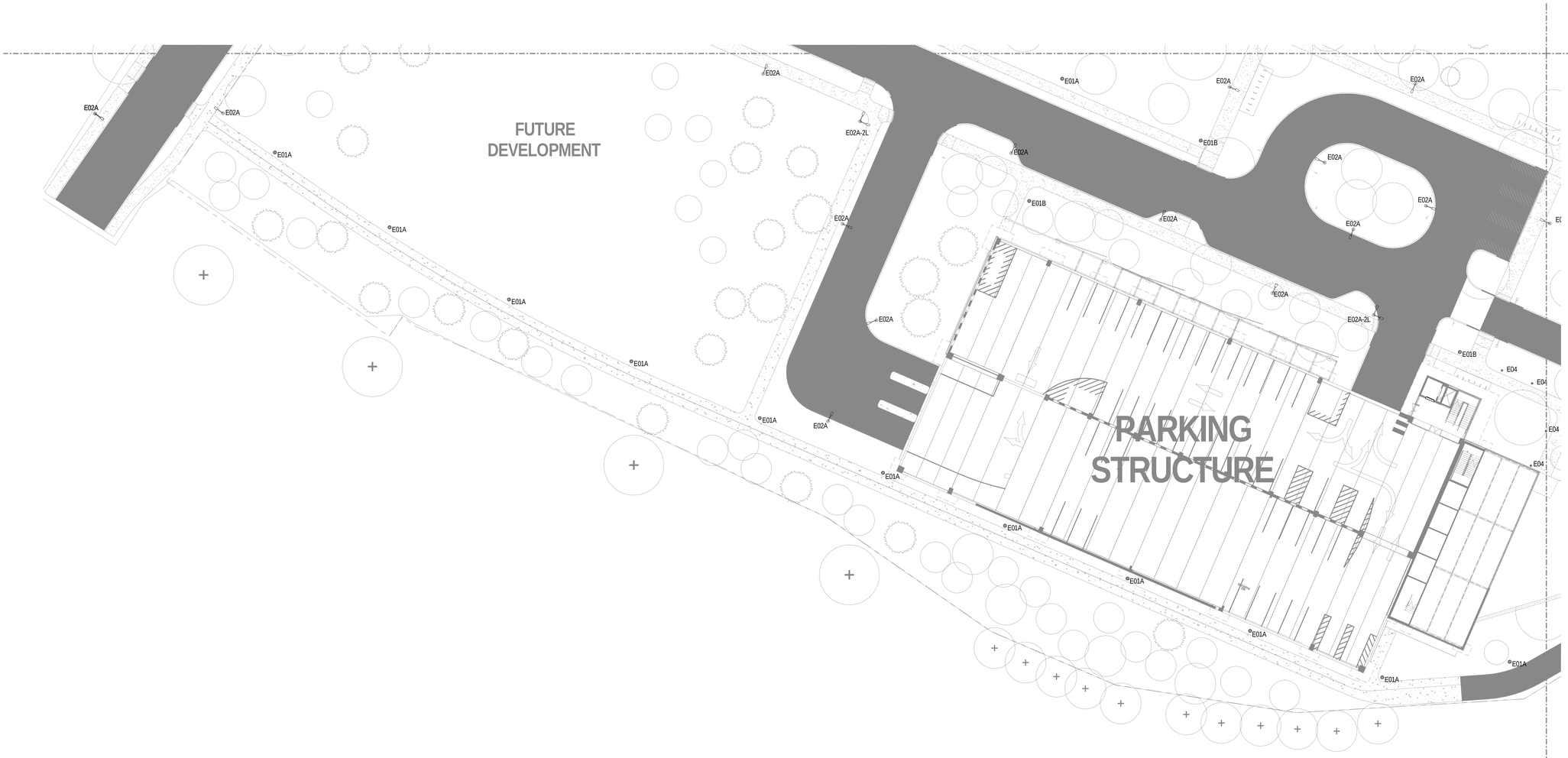
Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS Checked JW
Date	27 OCTOBER 2023
Scale	1" = 20'-0"

Drawing Title
SITE LIGHTING PLAN - PART C

E1.00C

10/27/2023 2:21:20 PM



1 SITE LIGHTING PLAN - PART D
1" = 20'-0"

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Scale	1" = 20'-0"

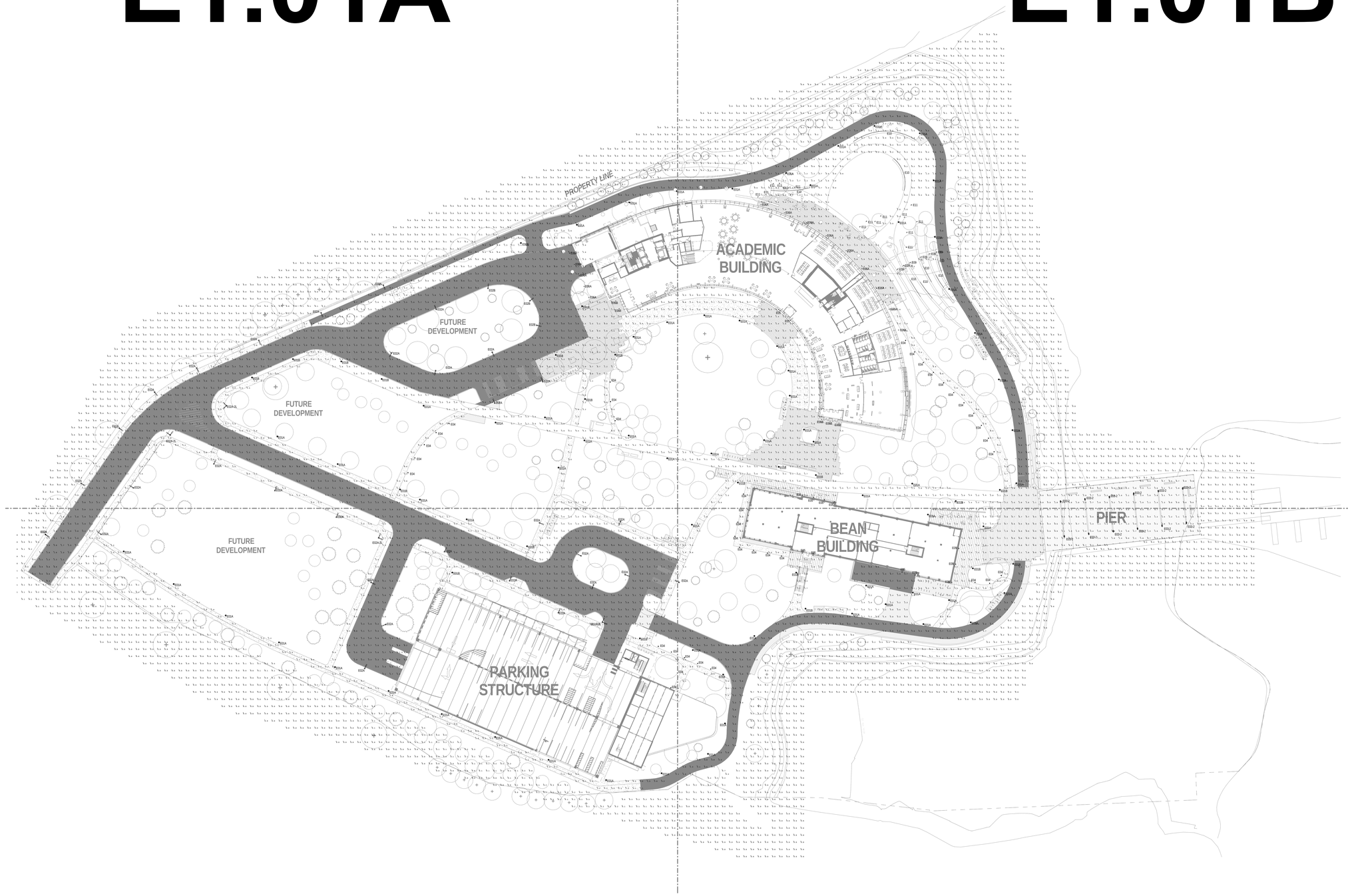
Drawing Title
SITE LIGHTING PLAN - PART D

E1.00D

10/27/2023 2:21:21 PM

E1.01A

E1.01B



E1.01D

E1.01C

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10.27.2023

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS
Checked	JW
Date	27 OCTOBER 2023
Scale	1" = 40'-0"

Drawing Title

SITE LIGHTING PHOTOMETRIC KEY PLAN

E1.01

The City of Portland Technical Manual - Section 12 - Site Lighting (Adopted 3/26/19; Rev. 12/8/20)

12.1. PURPOSE
The intent of this design is to promote and protect public health, safety and general welfare, and encourage the preservation of the natural nighttime outdoor environment. Specifically, the intent of this design is to limit light trespass, glare and light pollution to safeguard adequate safety, night vision, and comfort of the neighboring properties.

12.3. GENERAL STANDARDS
Outdoor lighting standards listed below apply to the Site Lighting
• Uniformity: 20:1
• Illumination levels: Min 0.2 (fc), Max 5.0 (fc), Ave 1.25 (fc)
• No fixture shall exceed 20,000 lumens (± 3%).
- Path lighting: 1,500 lumens Maximum Lumens allowed will apply to E04.
- Residential/ Commercial Pole at 20' : 15,000 lumens Maximum Lumens allowed will apply to E01 Series, E02 Series, and E03.
- Building Entrance: 3,500 lumens Maximum Lumens allowed will apply to E05 and E06 Series.
• Light Trespass: The maximum illumination level at a property line shall not exceed 0.1fc at the waterline (sensitive use) or 1.0fc next to industrial and/or non-sensitive uses. All adjacent properties are considered non-sensitive (interstate, rail right-of-way).
• Full Cut-off Fixtures and Shielding Required. All the lighting fixtures selected are full cutoff and the uplight component of the BUG rating is U0. Please note that the E04 is Night Sky friendly with minimum uplight component and U1 rating. The E10 linear tape light fixtures are installed aimed at the ground and integrated into an architectural detail, to eliminate the possibility of uplight.
• Fixture Height:
- Building Mounted/ Entrances: below the roof eave and not to exceed 20 feet, whichever is lower. As only exceptions, E06B will be mounted under the lowest point of the building canopy, at 32ft.
- All the light poles and bollards respect the height provision (Light sources on Poles at or below 20ft - Bollards at or below 3.5')

12.5. ARCHITECTURAL AND SPECIALTY LIGHTING AND UPLIGHTING
For accent lighting of the Landscape, E11 fixture will be installed upward and aimed on the trees.
E11 does not exceed 4,000 mean lumens per accent feature, is fully shielded from view off-site, and uses a narrow cone of light for the purpose of confining the light to the object.

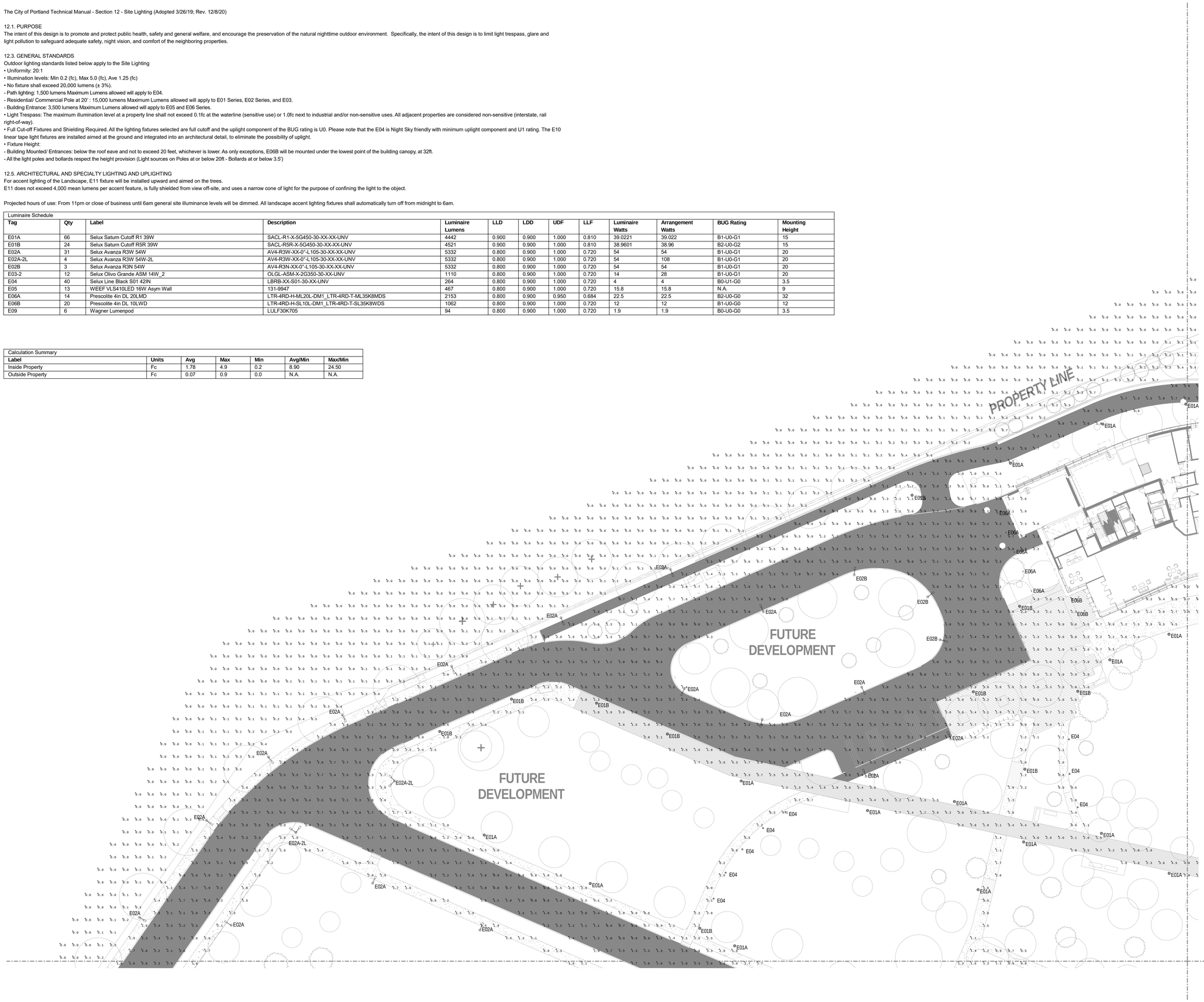
Projected hours of use: From 11pm or close of business until 6am general site illuminance levels will be dimmed. All landscape accent lighting fixtures shall automatically turn off from midnight to 6am.

Luminaire Schedule

Tag	Qty	Label	Description	Luminaire Lumens	LLD	LDD	UDF	LLF	Luminaire Watts	Arrangement Watts	BUG Rating	Mounting Height
E01A	66	Selux Saturn Cutoff R1 39W	SACL-R1-X-5G450-30-XX-XX-UNV	4442	0.900	0.900	1.000	0.810	39.0221	39.022	B1-U0-G1	15
E01B	24	Selux Saturn Cutoff R5R 39W	SACL-R5R-X-5G450-30-XX-XX-UNV	4521	0.900	0.900	1.000	0.810	38.9601	38.96	B2-U0-G2	15
E02A	31	Selux Avanza R3W 54W	AV4-R3W-XX-0°-L105-30-XX-XX-UNV	5332	0.800	0.900	1.000	0.720	54	54	B1-U0-G1	20
E02A-2L	4	Selux Avanza R3W 54W-2L	AV4-R3W-XX-0°-L105-30-XX-XX-UNV	5332	0.800	0.900	1.000	0.720	54	108	B1-U0-G1	20
E02B	3	Selux Avanza R3N 54W	AV4-R3N-XX-0°-L105-30-XX-XX-UNV	5332	0.800	0.900	1.000	0.720	54	54	B1-U0-G1	20
E03-2	12	Selux Olivo Grande ASM 14W_2	OLGL-ASM-X-2G350-30-XX-UNV	1110	0.800	0.900	1.000	0.720	14	28	B1-U0-G1	20
E04	40	Selux Line Black S01 42IN	LBRB-XX-S01-30-XX-UNV	264	0.800	0.900	1.000	0.720	4	4	B0-U1-G0	3.5
E05	13	WEEF VLS410LED 16W Asym Wall	131-9947	467	0.800	0.900	1.000	0.720	15.8	15.8	N.A.	9
E06A	14	Prescolite 4in DL 20LMD	LTR-4RD-H-ML20L-DM1_LTR-4RD-T-ML35K8MDS	2153	0.800	0.900	0.950	0.684	22.5	22.5	B2-U0-G0	32
E06B	20	Prescolite 4in DL 10LWD	LTR-4RD-H-SL10L-DM1_LTR-4RD-T-SL35K8WDS	1062	0.800	0.900	1.000	0.720	12	12	B1-U0-G0	12
E09	6	Wagner Lumenpod	LULF30K705	94	0.800	0.900	1.000	0.720	1.9	1.9	B0-U0-G0	3.5

Calculation Summary

Label	Units	Avg	Max	Min	Avg/Min	Max/Min
Inside Property	Fc	1.78	4.9	0.2	8.90	24.50
Outside Property	Fc	0.07	0.9	0.0	N.A.	N.A.



1 SITE LIGHTING PHOTOMETRIC PLAN - PART A
1" = 20'-0"

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Number	Revision	Date

COMMONWEALTH OF MASSACHUSETTS JULIAN ASTBURY ELECTRICAL No. 45456 REGISTERED PROFESSIONAL ENGINEER

10.27.2023

Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS Checked JW
Date	27 OCTOBER 2023
Scale	As indicated

Drawing Title
SITE LIGHTING PHOTOMETRIC PLAN - PART A

E1.01A

10/27/2023 2:21:31 PM



1 SITE LIGHTING PHOTOMETRIC PLAN - PART B
1" = 20'-0"

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Boston MA 02109
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SITE PLAN SUBMISSION

Number	Revision	Date

COMMONWEALTH OF MASSACHUSETTS
JULIAN ASTBURY
ELECTRICAL
No. 16455
REGISTERED
PROFESSIONAL ENGINEER

10.27.2023

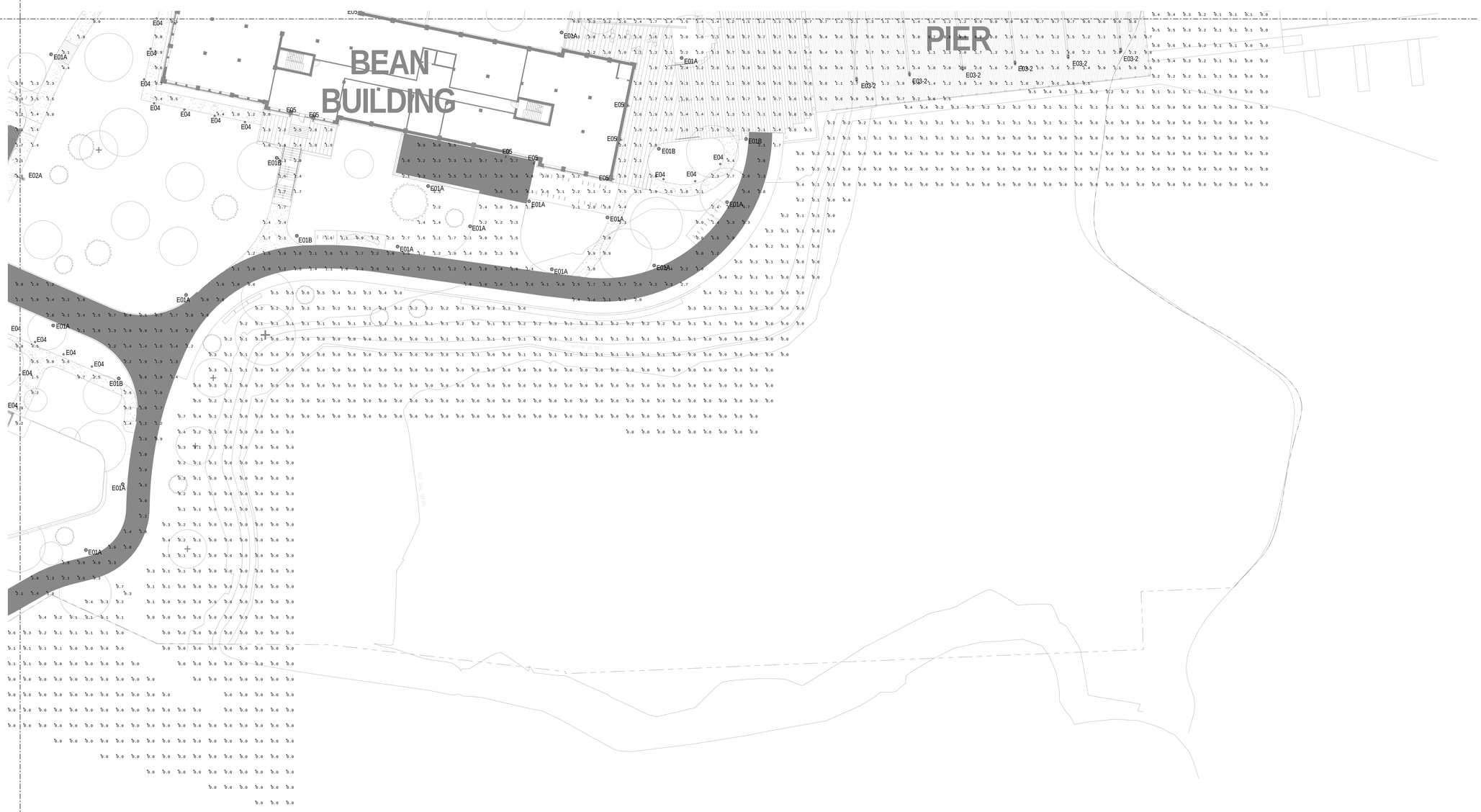
Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS
Checked	JW
Date	27 OCTOBER 2023
Scale	1" = 20'-0"

Drawing Title
SITE LIGHTING PHOTOMETRIC PLAN - PART B

E1.01B

10/27/2023 2:21:28 PM



1 SITE LIGHTING PHOTOMETRIC PLAN - PART C
1" = 20'-0"

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SITE PLAN SUBMISSION

Number	Revision	Date

COMMONWEALTH OF MASSACHUSETTS
JULIAN ARTBURY
ELECTRICAL
No. 45405
REGISTERED PROFESSIONAL ENGINEER

10.27.2023

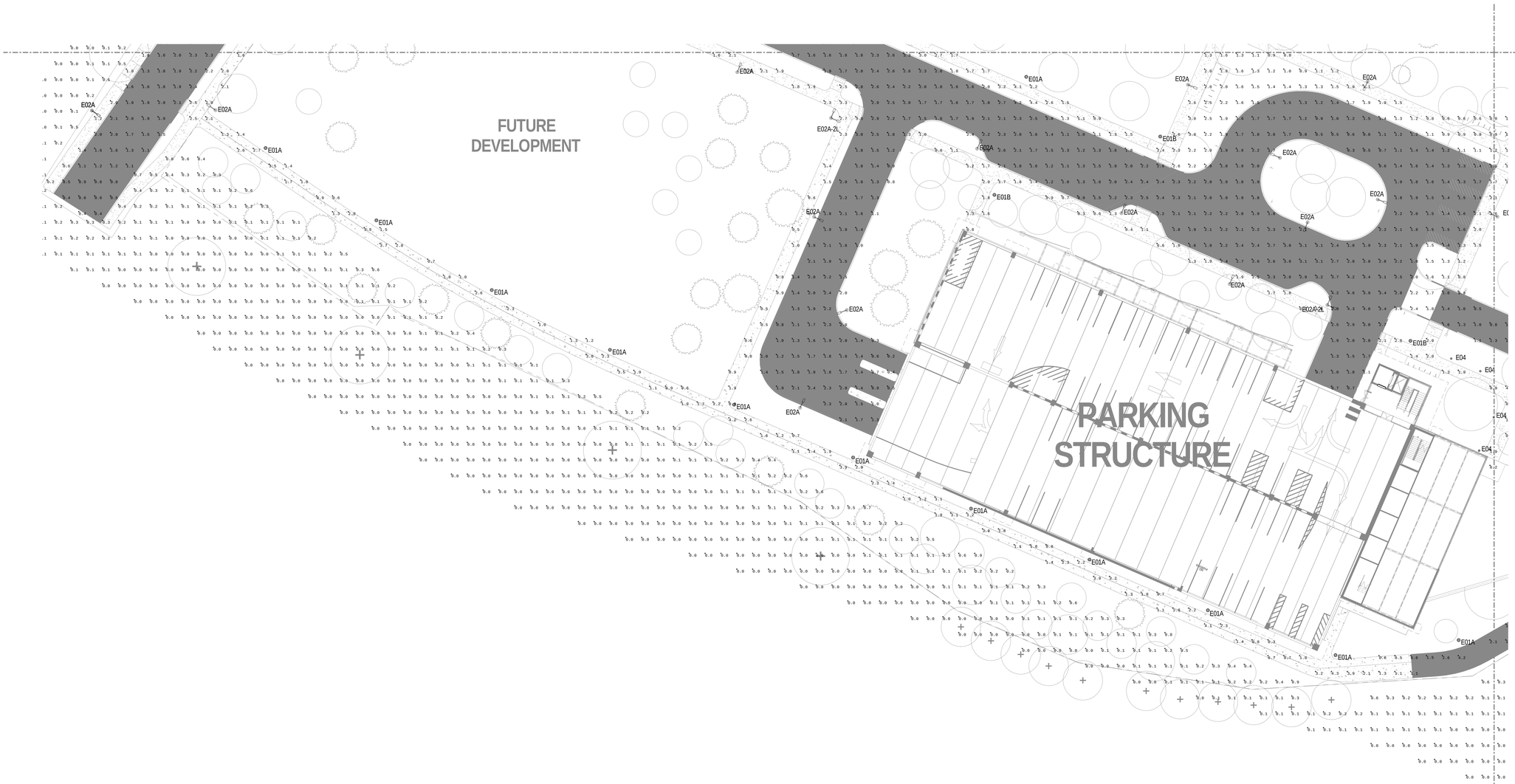
Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS Checked JW
Date	27 OCTOBER 2023
Scale	1" = 20'-0"

Drawing Title
SITE LIGHTING PHOTOMETRIC PLAN - PART C

E1.01C

10/27/2023 2:21:25 PM



1 SITE LIGHTING PHOTOMETRIC PLAN - PART D
1" = 20'-0"

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SITE PLAN SUBMISSION

Number	Revision	Date

COMMONWEALTH OF MASSACHUSETTS
JULIAN ASTBURY
ELECTRICAL
No. 19459
REGISTERED PROFESSIONAL ENGINEER

10.27.2023

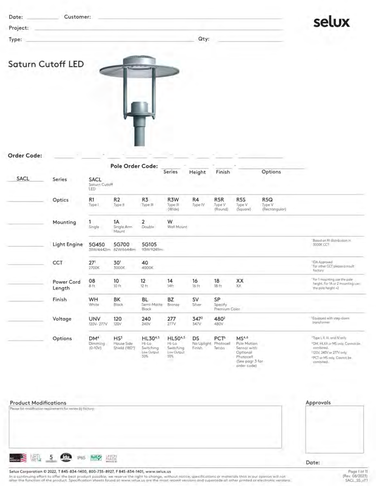
Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS Checked JW
Date	27 OCTOBER 2023
Scale	1" = 20'-0"

Drawing Title
SITE LIGHTING PHOTOMETRIC PLAN - PART D

E1.01D

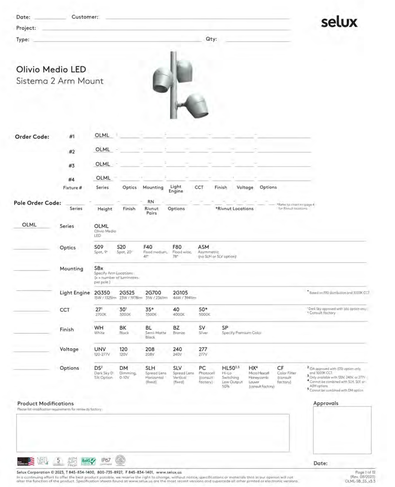
10/27/2023 2:21:23 PM



E01 SERIES



E02 SERIES



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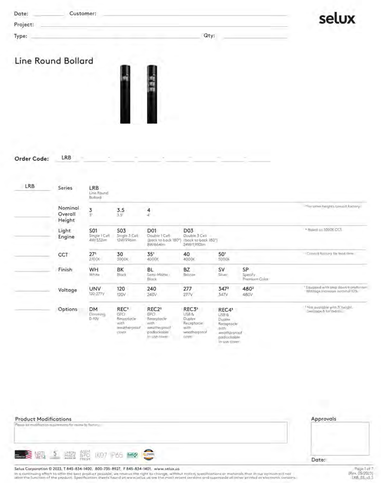

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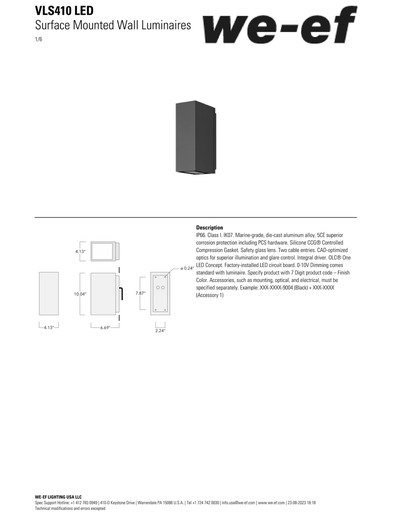
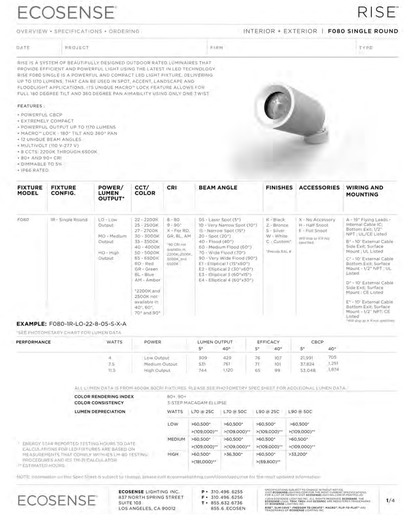


E05



E06 SERIES



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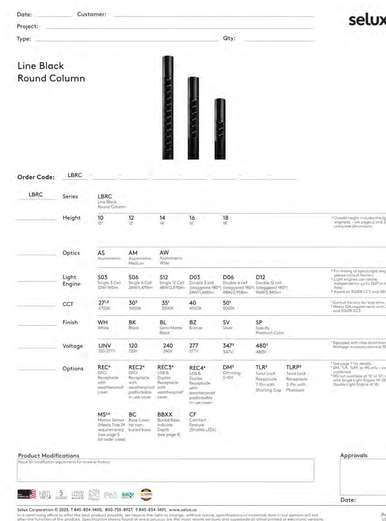
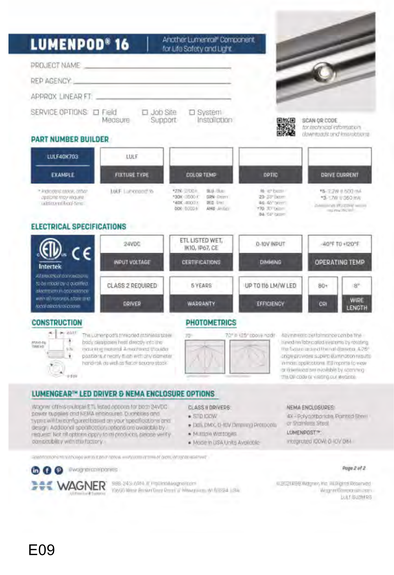


E08



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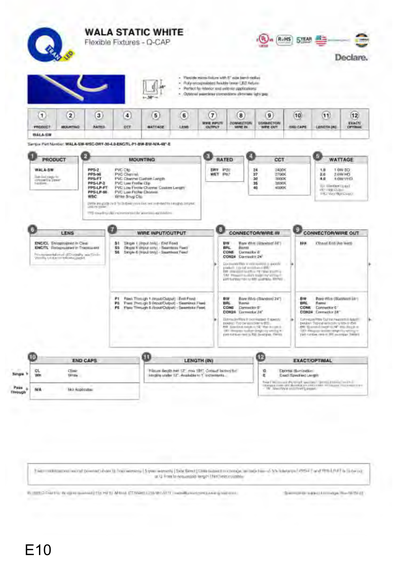

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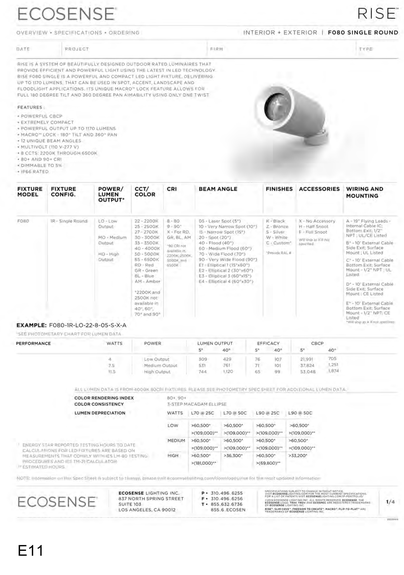

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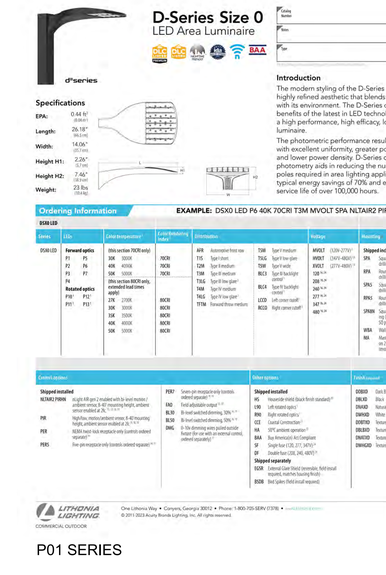

P01 SERIES

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SITE PLAN SUBMISSION

Number	Revision	Date

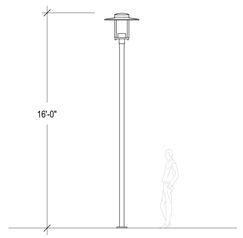
COMMONWEALTH OF MASSACHUSETTS
JULIAN ASTBURY
ELECTRICAL ENGINEER
No. 10455
REGISTERED PROFESSIONAL ENGINEER
10.27.2023
Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS Checked JW
Date	27 OCTOBER 2023
Scale	NTS

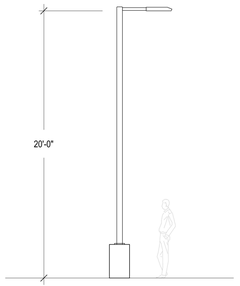
Drawing Title
SITE LIGHTING SCHEDULES AND DETAILS SHEET 1

E1.02

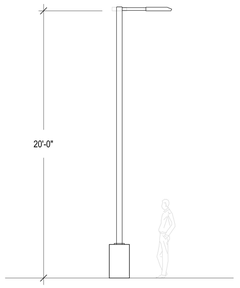
10/27/2023 2:21:07 PM



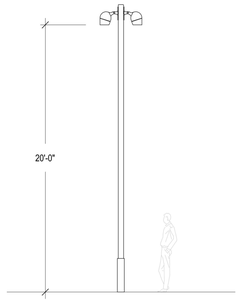
E01 SERIES POLE MOUNTED LUMINAIRES
SCALE: 1/4" = 1'-0"



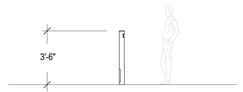
E02 SERIES POLE MOUNTED LUMINAIRES
SCALE: 1/4" = 1'-0"



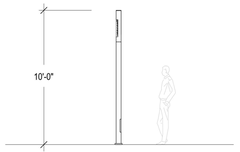
E02A-2L POLE MOUNTED LUMINAIRE
SCALE: 1/4" = 1'-0"



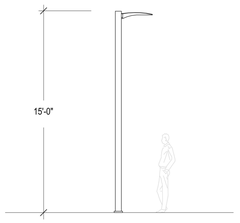
E03-2 POLE MOUNTED LUMINAIRE
SCALE: 1/4" = 1'-0"



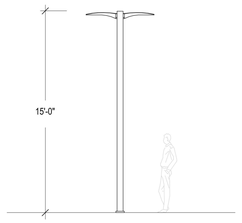
E04 BOLLARD LUMINAIRE
SCALE: 1/4" = 1'-0"



E08 POLE MOUNTED LUMINAIRE
SCALE: 1/4" = 1'-0"



P01 SERIES POLE MOUNTED LUMINAIRES
SCALE: 1/4" = 1'-0"



P01A-2 POLE MOUNTED LUMINAIRE
SCALE: 1/4" = 1'-0"

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SITE PLAN SUBMISSION

Number	Revision	Date

COMMONWEALTH OF MASSACHUSETTS
JULIAN WESLEY ANTOLIK
ELECTRICAL
No. 54459
REGISTERED PROFESSIONAL ENGINEER

10.27.2023

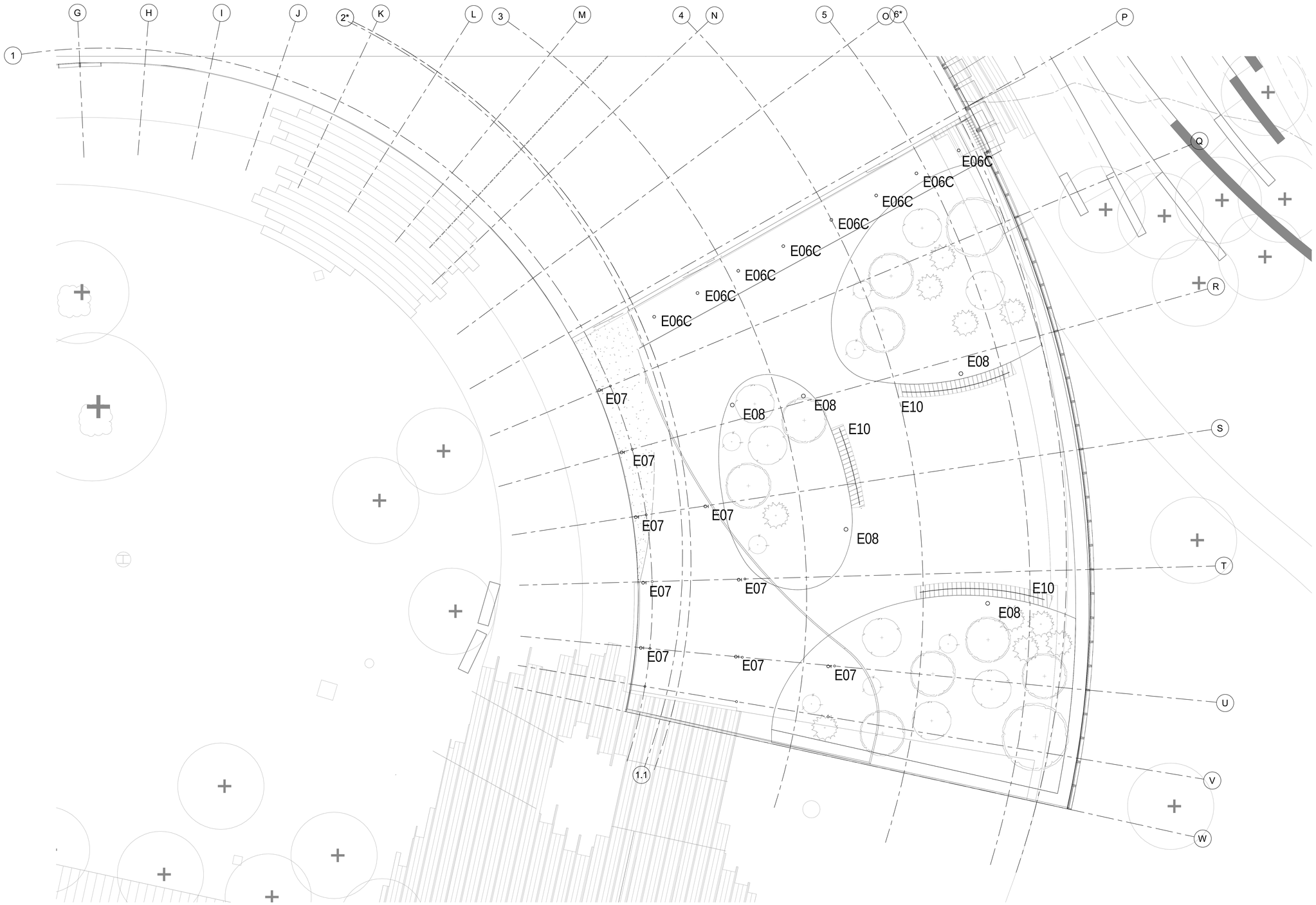
Stamps

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS Checked JW
Date	27 OCTOBER 2023
Scale	1/4" = 1'-0"

Drawing Title
SITE LIGHTING SCHEDULES AND DETAILS SHEET 2

E1.03

10/27/2023 2:21:04 PM



1 SITE LIGHTING - LEVEL 3 TERRACE
1/8" = 1'-0"

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SITE PLAN SUBMISSION

Number	Revision	Date

COMMONWEALTH OF MASSACHUSETTS
JULIAN ARTBURY
ELECTRICAL
No. 49455
REGISTERED PROFESSIONAL ENGINEER

10.27.2023

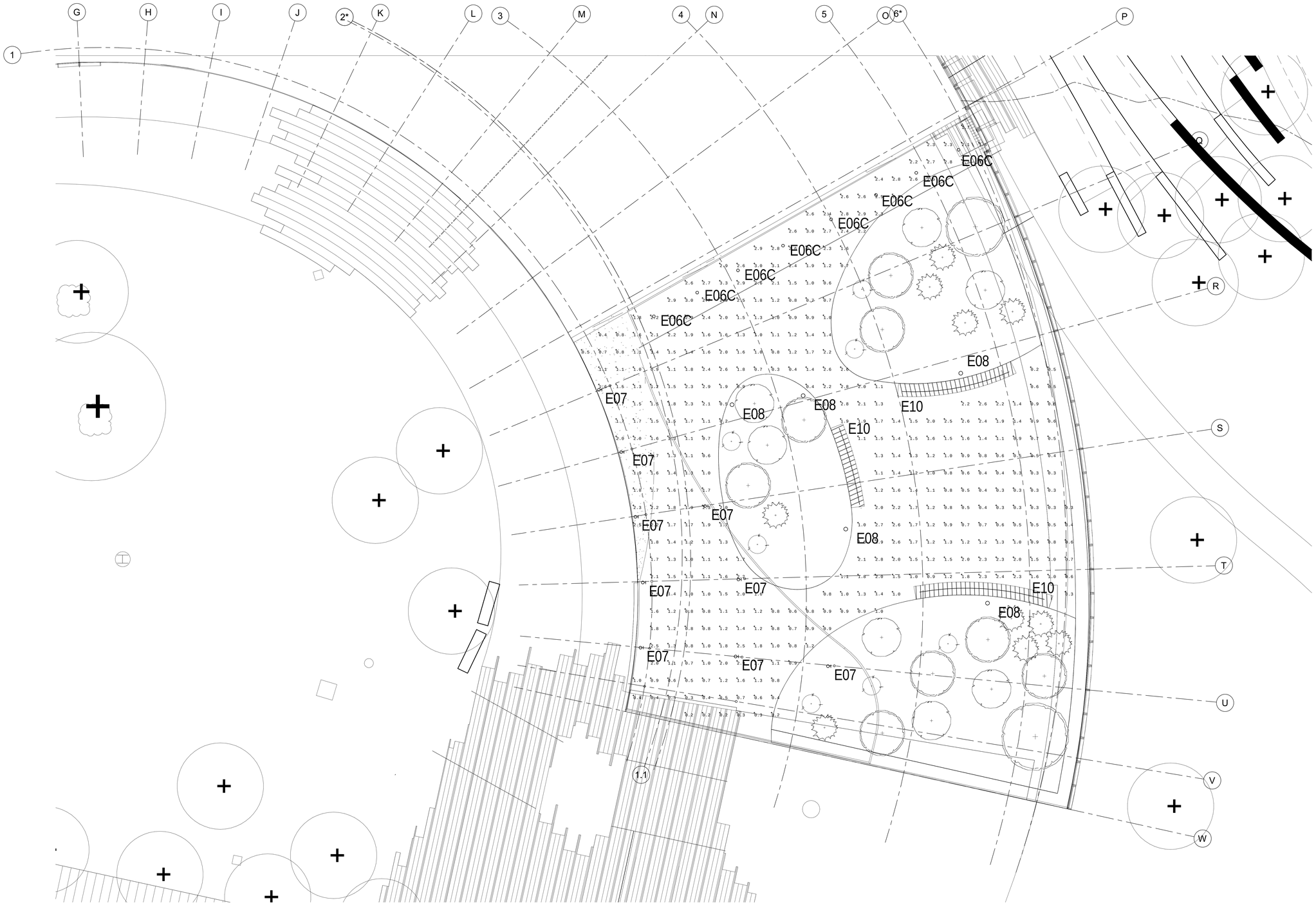
Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS Checked JW
Date	27 OCTOBER 2023
Scale	1/8" = 1'-0"

Drawing Title
SITE LIGHTING - LEVEL 3 TERRACE

E1.04

10/27/2023 2:21:34 PM



The City of Portland Technical Manual - Section 12 - Site Lighting (Adopted 3/26/19; Rev. 12/8/20)

12.1. PURPOSE
The intent of this design is to promote and protect public health, safety and general welfare, and encourage the preservation of the natural nighttime outdoor environment. Specifically, the intent of this design is to limit light trespass, glare and light pollution to safeguard adequate safety, night vision, and comfort of the neighboring properties.

12.3. GENERAL STANDARDS
Outdoor lighting standards listed below apply to the Level 3 Terrace Lighting
• Uniformity: 20:1
• Illumination levels: Min 0.2 (fc), Max 5.0 (fc), Ave 1.25 (fc)
• No fixture shall exceed 20,000 lumens (± 3%).
- Path lighting: 1,500 lumens Maximum Lumens allowed will apply to E08.
- Building Entrance: 3,500 lumens Maximum Lumens allowed will apply to E06C
• Light Trespass: The maximum illumination level at a property line shall not exceed 0.1 (fc)
• Full Cut-off Fixtures and Shielding Required. All the lighting fixtures selected are full cutoff and the uplight component of the BUG rating is U0.
Please note that the E08 is Night Sky friendly with minimum uplight component and U1 rating. The E10
linear tape light fixtures are installed aimed at the ground and integrated into an architectural detail, to eliminate the possibility of uplight. E07 is installed below the trellis structure aimed down.
• Fixture Height:
- All the light poles and bollards respect the height provision (Light sources on Poles at or below 20ft)

Projected hours of use: From 11pm or close of business until 6am general site illuminance levels will be dimmed. All landscape accent lighting fixtures shall automatically turn off from midnight to 6am.

Luminaire Schedule
Scene: Flood Light Scheme

Tag	Qty	Label	Description	Luminaire Lumens	LLD	LDD	UDF	LLF	Luminaire Watts	Arrangement Watts	BUG Rating	Mounting Height
E06C	8	Prescolite LTR	LTR-4RD-H-SL06L-DMTW_LTR-4RD-T-SL2230TD9XWS	571	0.800	0.900	1.000	0.720	10	10	B1-U0-G0	11.454
E07	9	Ecosense WF 11W	F080-1R-HO-30-9-90-X-X-X	708	0.900	0.800	1.000	0.720	11.5	11.5	B1-U1-G0	9, 11, 12, 13.6
E08	5	Linea Black Selux S06 Asymmetric Wide 24W	LRBC-XX-AW-S06-30-XX-UNV	1479	0.900	0.950	1.000	0.855	24	24	B0-U1-G1	10
E10	1	Q-tran Wala 1W-ft	WALA-SW-WSC-DRY-30-SO-ENC-TL_1	39	0.800	0.900	1.000	0.720	1.01	1.01	B0-U1-G0	2

Calculation Summary
Scene: Flood Light Scheme

Label	Units	Avg	Max	Min	Avg/Min	Max/Min
Floor_Planar	Fc	1.46	3.3	0.2	7.30	16.50

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SITE PLAN SUBMISSION

Number	Revision	Date

COMMONWEALTH OF MASSACHUSETTS
JULIAN ASTBURY
ELECTRICAL
No. 45458
REGISTERED PROFESSIONAL ENGINEER

10.27.2023

Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS
Checked	JW
Date	27 OCTOBER 2023
Scale	1/8"=1'-0"

Drawing Title
SITE LIGHTING - LEVEL 3 TERRACE PHOTOMETRIC PLAN

E1.05

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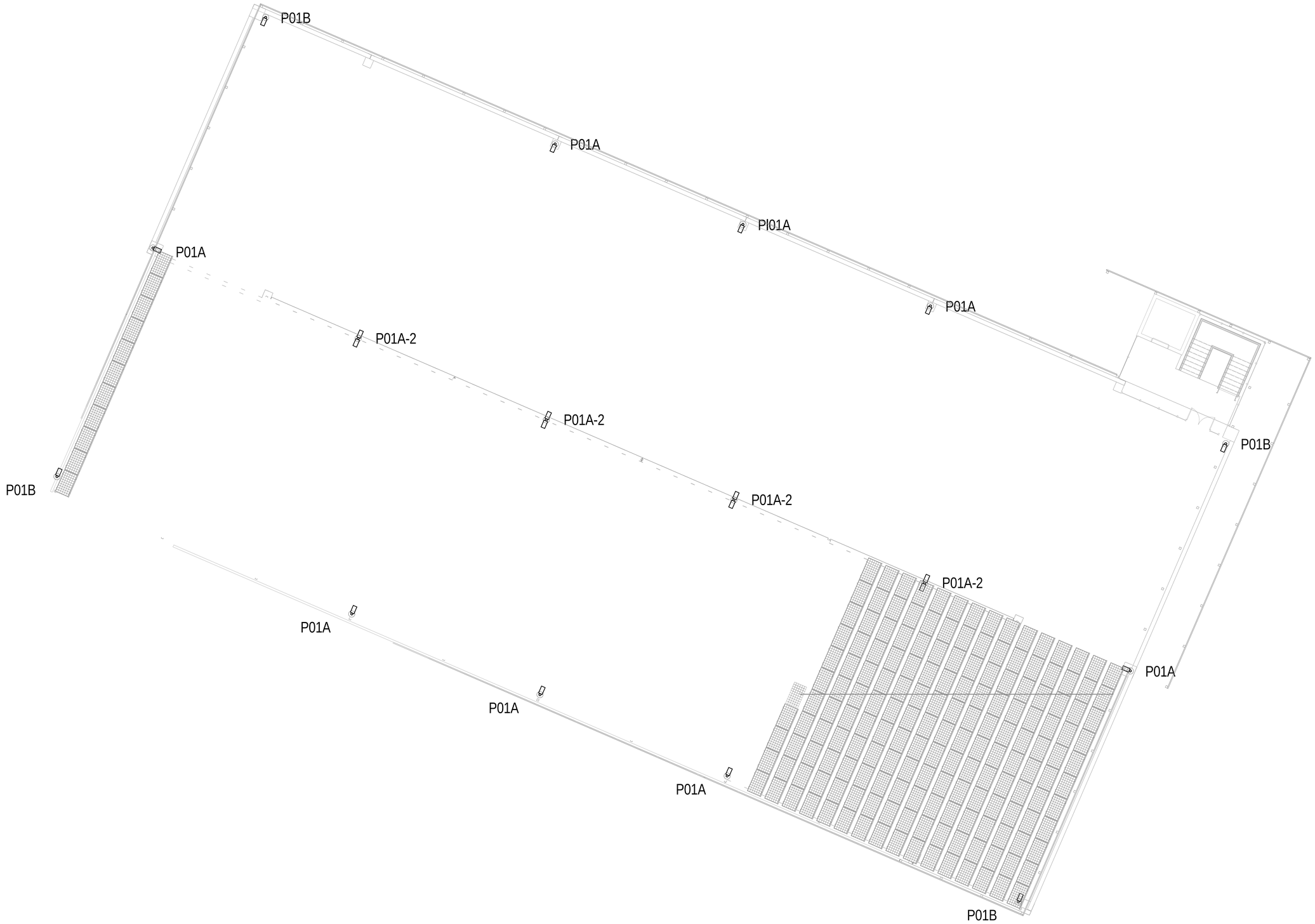

1 SITE LIGHTING - PARKING GARAGE TOP LEVEL
1/8" = 1'-0"

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SITE PLAN SUBMISSION

Number	Revision	Date

COMMONWEALTH OF MASSACHUSETTS
JULIAN ASTBURY
ELECTRICAL
No. 19459
REGISTERED PROFESSIONAL ENGINEER

10.27.2023

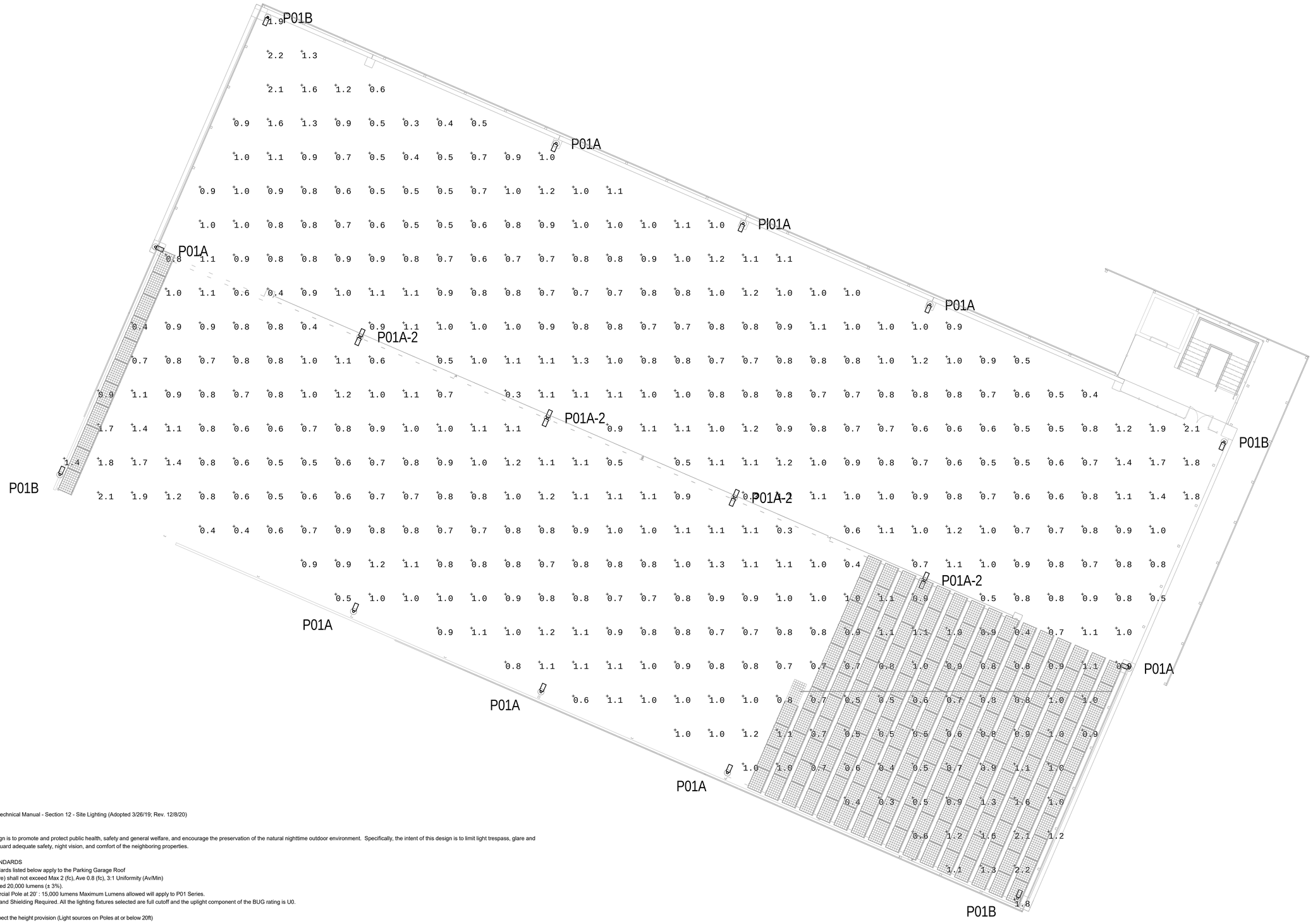
Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS
Checked	JW
Date	27 OCTOBER 2023
Scale	1/8" = 1'-0"

Drawing Title
SITE LIGHTING - PARKING GARAGE TOP LEVEL

E1.06

10/27/2023 2:21:49 PM



1 SITE LIGHTING - PARKING GARAGE TOP LEVEL
1/8" = 1'-0"

The City of Portland Technical Manual - Section 12 - Site Lighting (Adopted 3/26/19; Rev. 12/8/20)

12.1. PURPOSE
The intent of this design is to promote and protect public health, safety and general welfare, and encourage the preservation of the natural nighttime outdoor environment. Specifically, the intent of this design is to limit light trespass, glare and light pollution to safeguard adequate safety, night vision, and comfort of the neighboring properties.

12.3. GENERAL STANDARDS
Outdoor lighting standards listed below apply to the Parking Garage Roof
• Parking Lot (Structure) shall not exceed Max 2 (fc), Ave 0.8 (fc), 3:1 Uniformity (Av/Min)
• No fixture shall exceed 20,000 lumens (± 3%).
- Residential/ Commercial Pole at 20' : 15,000 lumens Maximum Lumens allowed will apply to P01 Series.
• Full Cut-off Fixtures and Shielding Required. All the lighting fixtures selected are full cutoff and the uplight component of the BUG rating is U0.
• Fixture Height:
- All the light poles respect the height provision (Light sources on Poles at or below 20ft)

Projected hours of use: From 11pm or close of business until 6am general site illuminance levels will be dimmed. All landscape accent lighting fixtures shall automatically turn off from midnight to 6am.

Luminaire Schedule

Tag	Qty	Label	Description	Luminaire Lumens	LLD	LDD	UDF	LLF	Luminaire Watts	Arrangement Watts	BUG Rating	Mounting Height
P01A	8	D-Series Size 0 BLC4 EGS	DSX0 LED P1 30K 80CRI BLC4 EGS-F	1610	0.900	0.900	1.000	0.810	33.21	33.21	B0-U0-G1	75
P01A-2	4	D-Series BLC4 EGS DH	DSX0 LED P1 30K 80CRI BLC4 EGS-F	1610	0.900	0.900	1.000	0.810	33.21	66.42	B0-U0-G1	75
P01B	4	D-Series Size 0 LCCO EGS_2	DSX0 LED P1 30K 80CRI LCCO EGS-F	1844	0.900	0.900	1.000	0.810	33.21	33.21	B0-U0-G0	75

Calculation Summary

Label	Units	Avg	Max	Min	Avg/Min	Max/Min
Parking Structure_Top	Fc	0.90	2.2	0.3	3.00	7.33

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SITE PLAN SUBMISSION

Number	Revision	Date

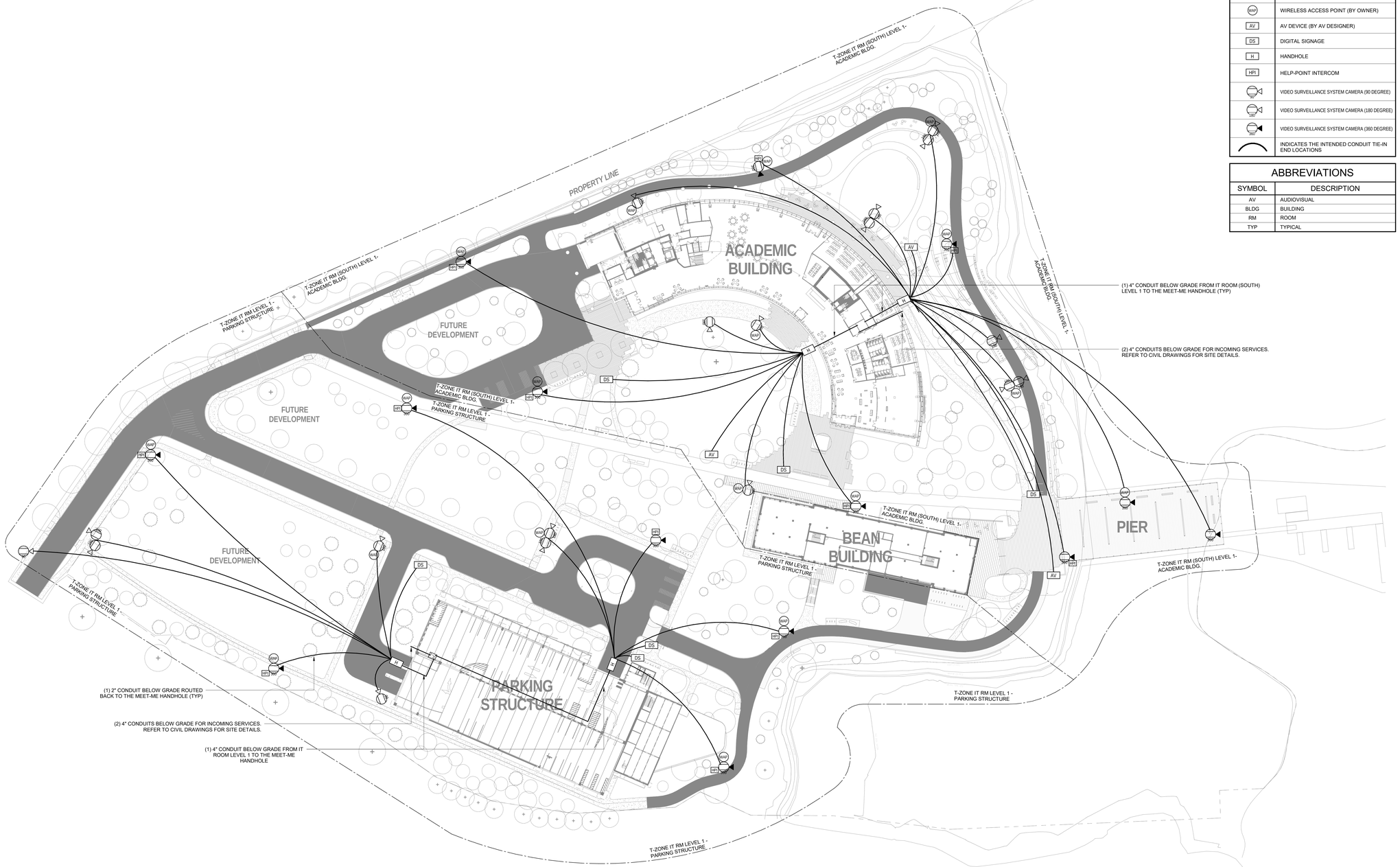
COMMONWEALTH OF MASSACHUSETTS
JULIAN ASTBURY
ELECTRICAL
No. 19459
REGISTERED PROFESSIONAL ENGINEER
10.27.2023

Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS
Checked	JW
Date	27 OCTOBER 2023
Scale	1/8"=1'-0"

Drawing Title
SITE PHOTOMETRIC PLAN - PARKING GARAGE TOP LEVEL

E1.07



LEGEND:	
SYMBOL	DESCRIPTION
	TELECOM SPACES/ROOM OUTLINE
T-ZONE IT RM-#	TELECOM ZONE SERVED BY IT ROOM # = NUMBER/NAME
WAP	WIRELESS ACCESS POINT (BY OWNER)
AV	AV DEVICE (BY AV DESIGNER)
DS	DIGITAL SIGNAGE
H	HANDHOLE
HPI	HELP-POINT INTERCOM
90°	VIDEO SURVEILLANCE SYSTEM CAMERA (90 DEGREE)
180°	VIDEO SURVEILLANCE SYSTEM CAMERA (180 DEGREE)
360°	VIDEO SURVEILLANCE SYSTEM CAMERA (360 DEGREE)
	INDICATES THE INTENDED CONDUIT TIE-IN END LOCATIONS

ABBREVIATIONS	
SYMBOL	DESCRIPTION
AV	AUDIOVISUAL
BLDG	BUILDING
RM	ROOM
TYP	TYPICAL

NOTES:

1. REFER TO SECURITY DRAWINGS FOR SECURITY SYMBOL LEGEND DETAILS.
2. ALL EXTERIOR DEVICES SHOWN ON PLAN SHALL BE MOUNTED ON LIGHT POLES (BY OTHERS) UNLESS COLOCATED WITH HELP-POINT INTERCOM.
3. BACKBONE AND INCOMING SERVICE PATHWAY DUCT BANKS ARE TO BE CONCRETE ENCASED, 4" PVC MATERIAL, USE MAXCELL FLEXIBLE FABRIC INNERDUCT SYSTEM EQUIPPED WITH PULL CORD.
4. HORIZONTAL DEVICE PATHWAYS ARE TO BE DIRECT BURIED CONDUITS OF UP TO 2" AS REQUIRED.
5. MINIMUM DEPTH FROM TOP OF THE CONDUIT MUST BE BURIED AT LEAST 24" BELOW THE GROUND SURFACE/FINISHED GRADE. IN AREAS WHERE FROST CONDITIONS COULD DAMAGE CABLES IN CONDUITS, AS A MINIMUM, THE DEPTH SHOULD BE BASED ON 50-YEAR FROST LINE.
6. THE MINIMUM BEND RADIUS FOR A CONDUIT THAT IS 2" OR LESS IN DIAMETER SHALL BE 6 TIMES THE INTERNAL CONDUIT DIAMETER. IF THE CONDUIT IS LARGER THAN 2" THE BEND RADIUS SHALL BE 10 TIMES THE INTERNAL DIAMETER OF THE CONDUIT.
7. PROVIDE A HANDHOLE IN CONDUIT RUNS SUCH THAT:
   A. MAXIMUM CONTINUOUS CONDUIT RUN SHALL NOT EXCEED 600FT
   B. NO MORE THAN TWO 90 DEGREE BENDS EXIST IN A CONTINUOUS CONDUIT RUN
   C. AT LEAST ONE HANDHOLE PER REVERSE (U-SHAPED) BEND IN CONDUIT RUN
   D. IT IS LOCATED IN THE STRAIGHT SECTION OF A CONDUIT AND NOT IN LIEU OF A BEND
   E. SIZE THE HANDHOLE ACCORDINGLY AND PER TIA STANDARDS
8. CONDUIT ENTRY INTO THE HANDHOLE SHALL BE SUCH THAT THE CONDUITS END ON OPPOSIDE ENDS OF THE HANDHOLE AND AT THE SAME ELEVATION, AND NOT ON THE SIDEWALLS

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Number	Revision	Date

COMMONWEALTH OF MASSACHUSETTS
JULIAN ASTBURY
ELECTRICAL
No. 45455
REGISTERED PROFESSIONAL ENGINEER

10.27.2023

Stamp

Job #	2102
Project	THE ROUX INSTITUTE
Drawn By	NJ
Checked	CJT
Date	27 OCTOBER 2023
Scale	1" = 40'-0"

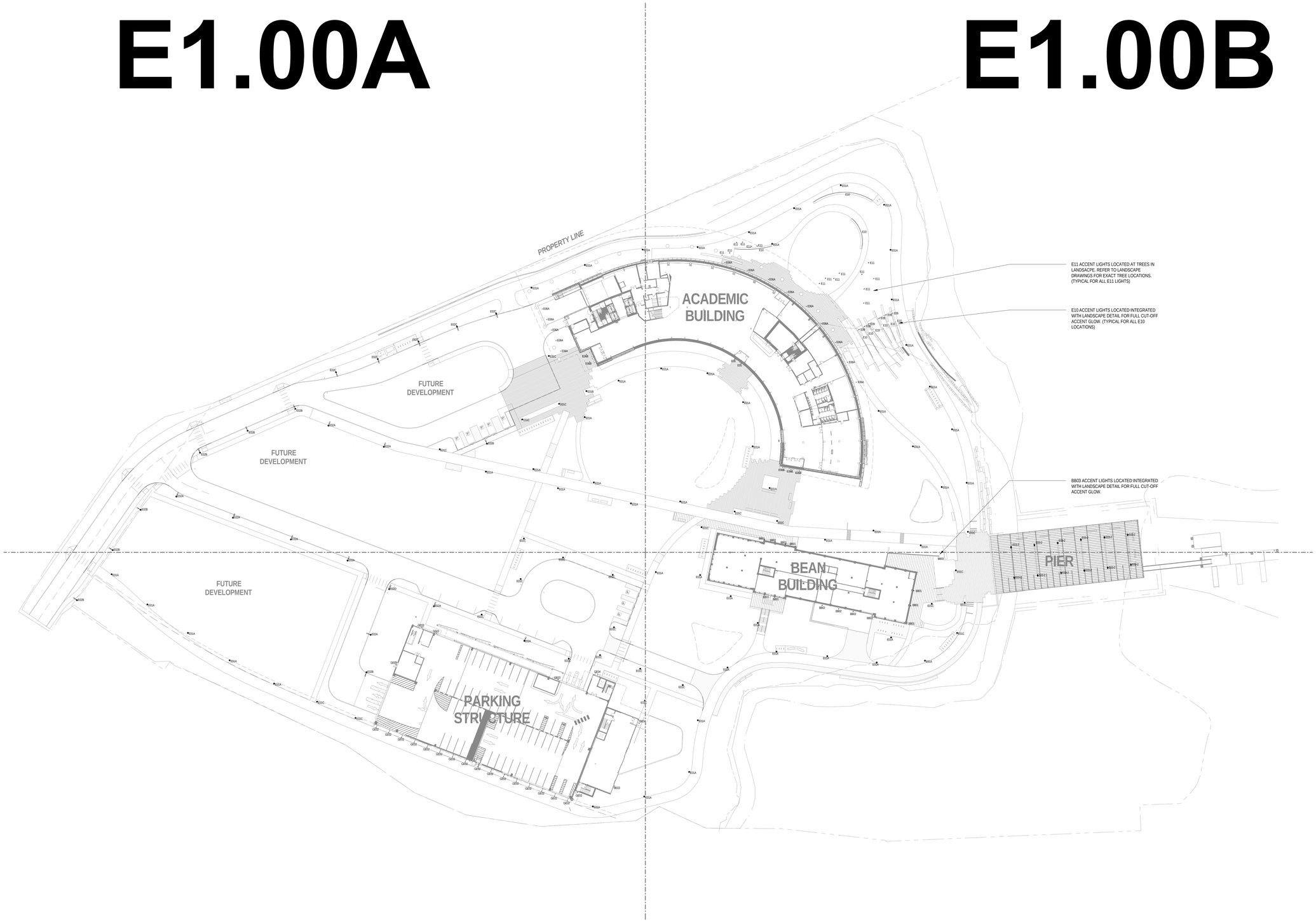
Drawing Title
TELECOM SITE PLAN

T1.01

10/27/2023 1:43:07 PM

E1.00A

E1.00B



E1.00D

E1.00C

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Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS Checked JW
Date	March 22, 2024
Scale	1" = 40'-0"

Drawing Title
SITE LIGHTING KEY PLAN

E1.00

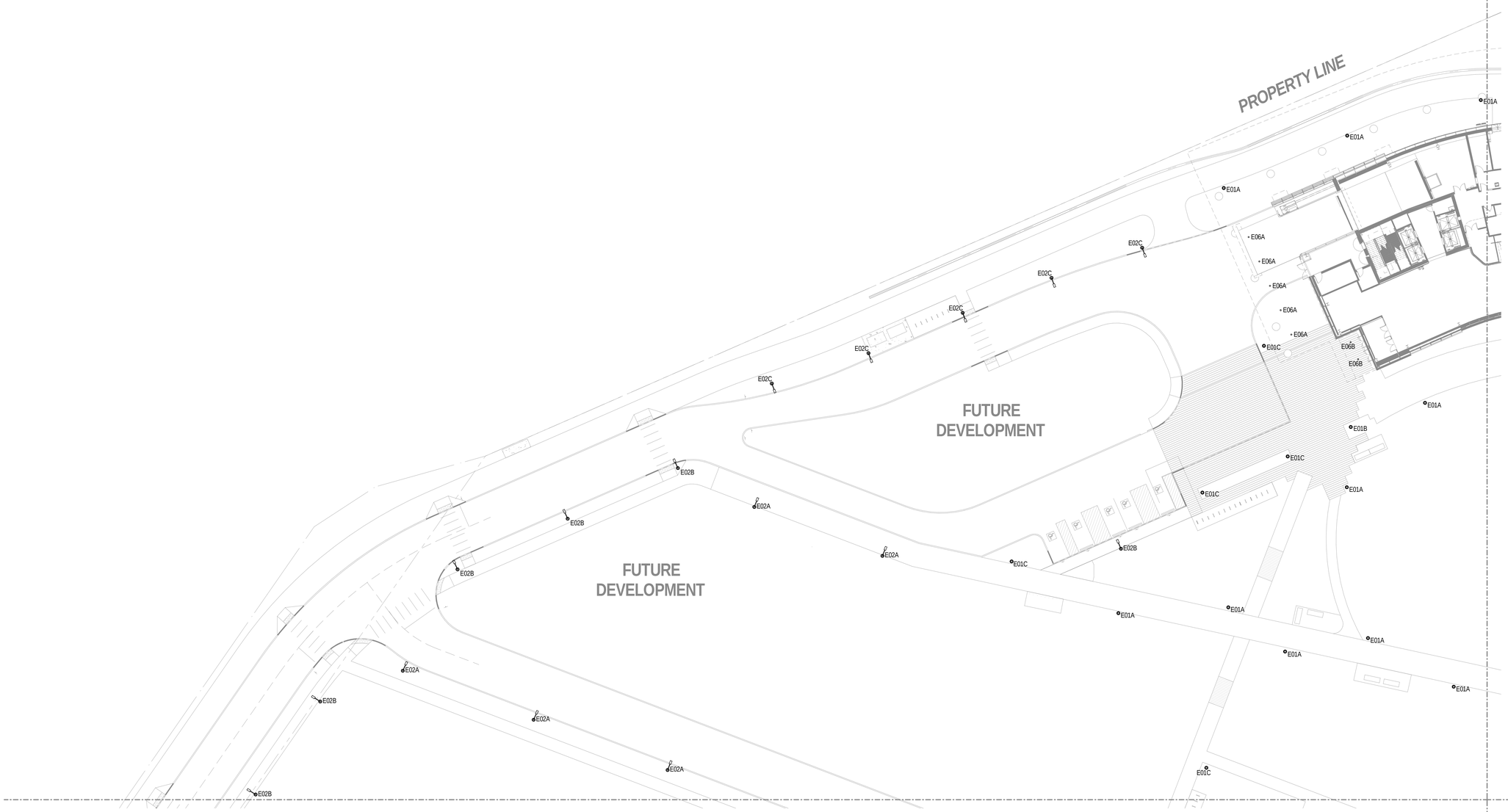
GENERAL NOTES:
1. FOR ELECTRICAL LEGEND, ABBREVIATIONS, AND GENERAL NOTES REFER TO DRAWING E0.00.

2. REFER TO DRAWING E1.03 FOR SITE LIGHTING HAND HOLE DETAIL. ALL SITE LIGHT FIXTURES SHALL HAVE A HANDHOLE.

3. REFER TO CIVIL DRAWINGS FOR EXACT LOCATIONS OF CONDUIT ROUTING AND ADDITIONAL INFORMATION.

4. ALL CONDUCTORS SHALL BE TYPE XHHW INSULATION.

5. ALL CIRCUITS IN THIS AREA TO BE SERVED BY PANEL L1S1H1.



1 SITE LIGHTING PLAN - PART A
1" = 20'-0"

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Drawing Title
SITE LIGHTING PLAN - PART A

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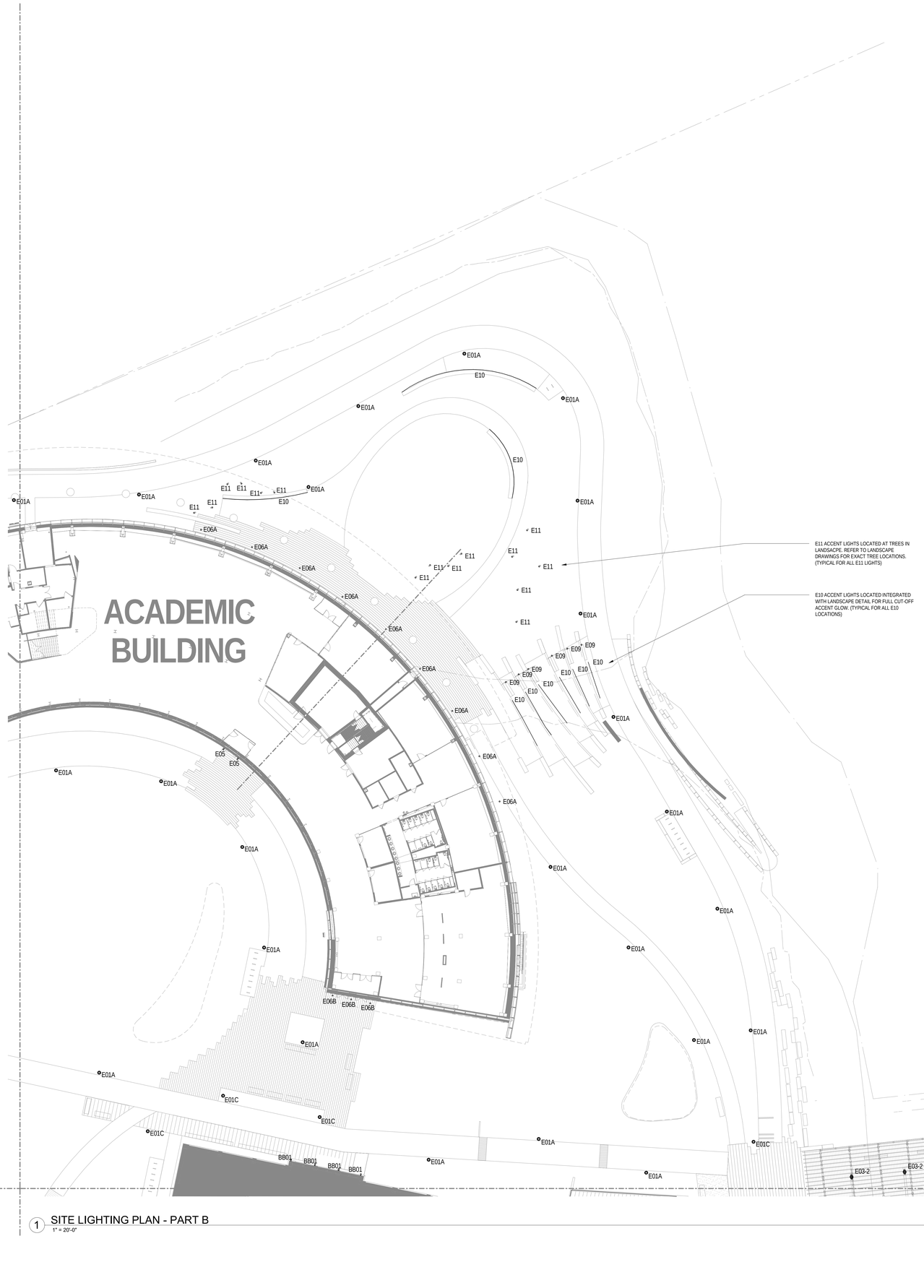
GENERAL NOTES:
1. ALL CIRCUITS IN THIS AREA TO BE SERVED BY PANEL L1S1H1.



1 SITE LIGHTING PLAN - PART B
1" = 20'-0"

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Drawing Title
SITE LIGHTING PLAN - PART B

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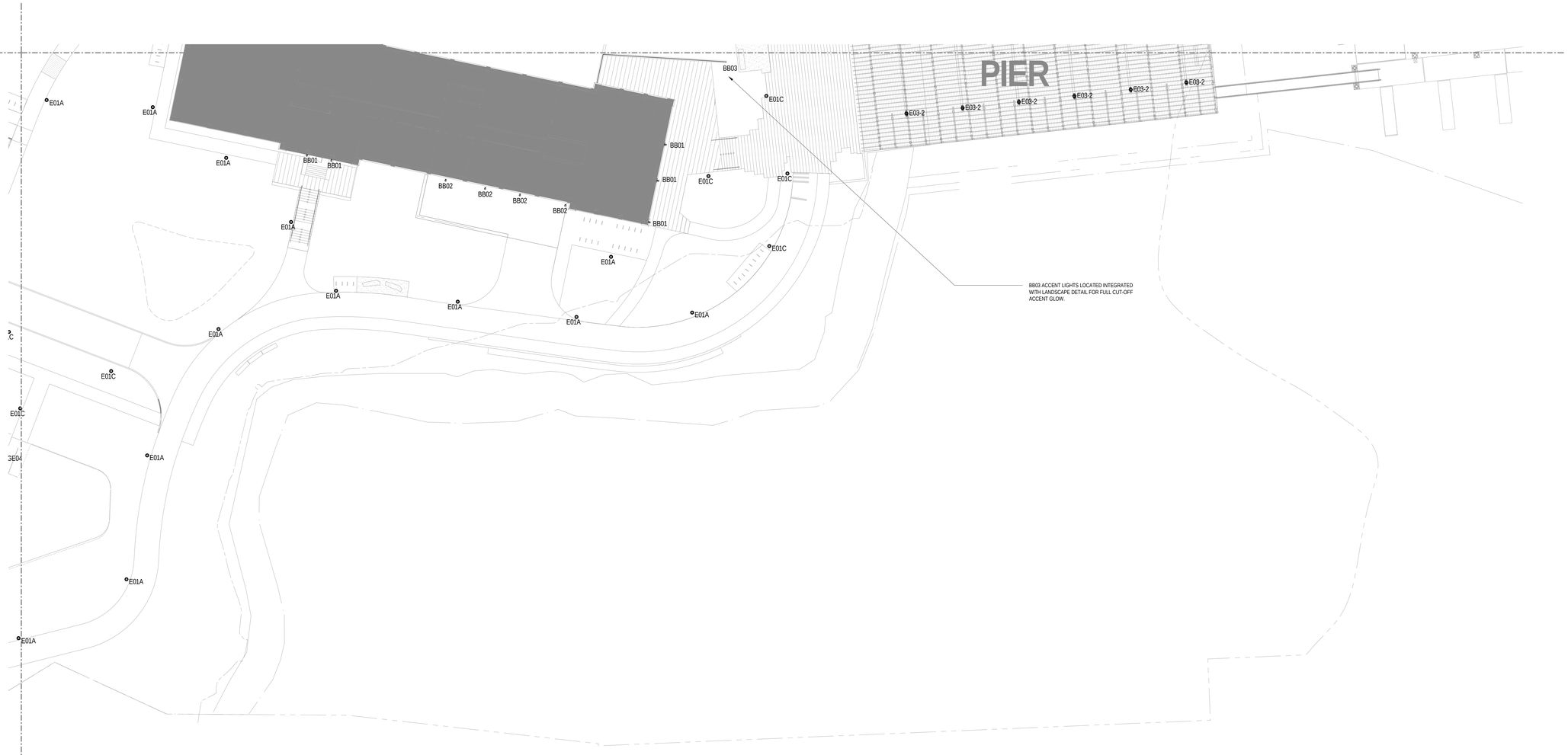
GENERAL NOTES:
1. ALL CIRCUITS IN THIS AREA TO BE SERVED BY PANEL L1S1H1.



1 SITE LIGHTING PLAN - PART C
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Drawing Title
SITE LIGHTING PLAN - PART C

E1.00C

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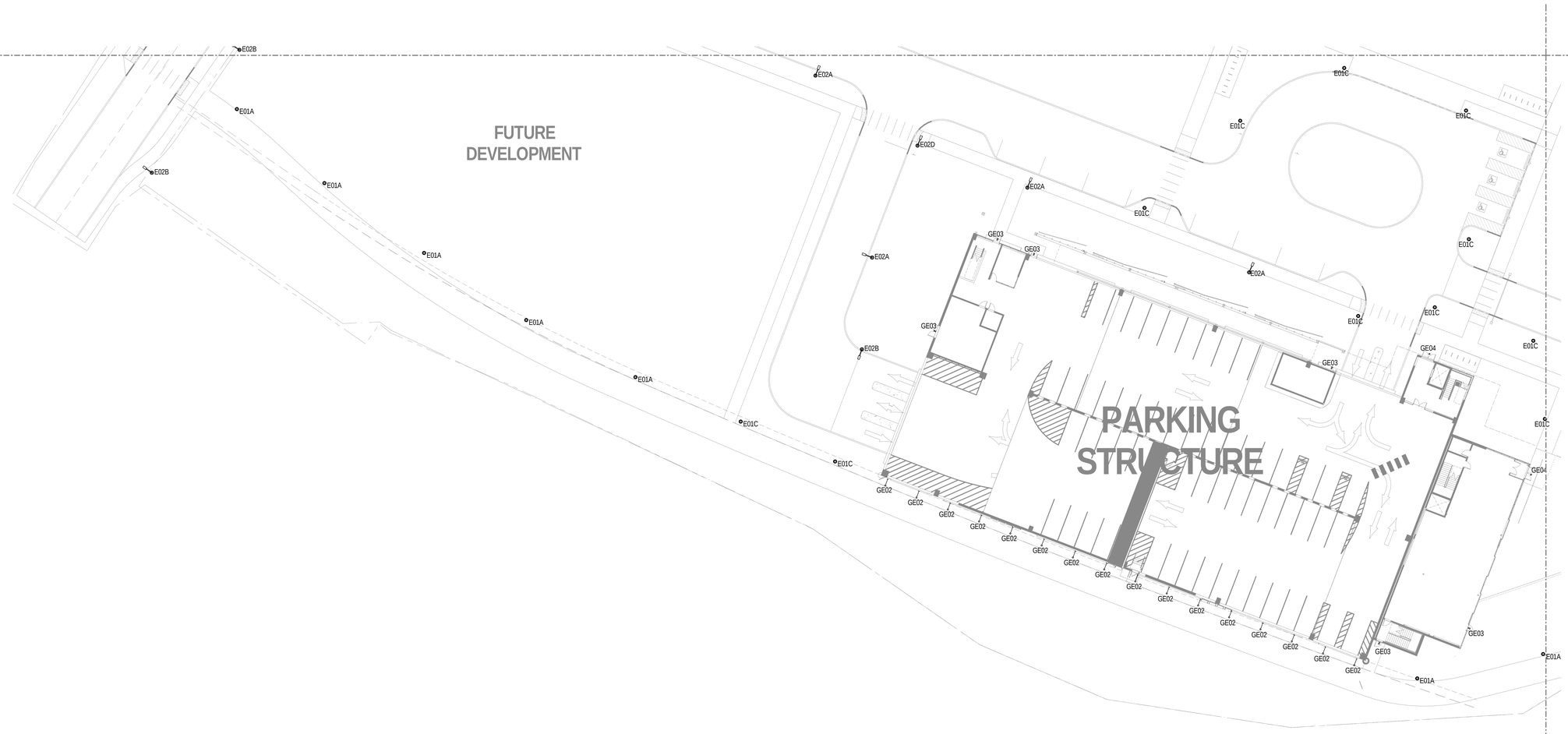
GENERAL NOTES:
1. ALL CIRCUITS IN THIS AREA TO BE SERVED BY PANEL L1S1H1.



1 SITE LIGHTING PLAN - PART D
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Date	March 22, 2024
Scale	1" = 20'-0"

Drawing Title
SITE LIGHTING PLAN - PART D

E1.00D

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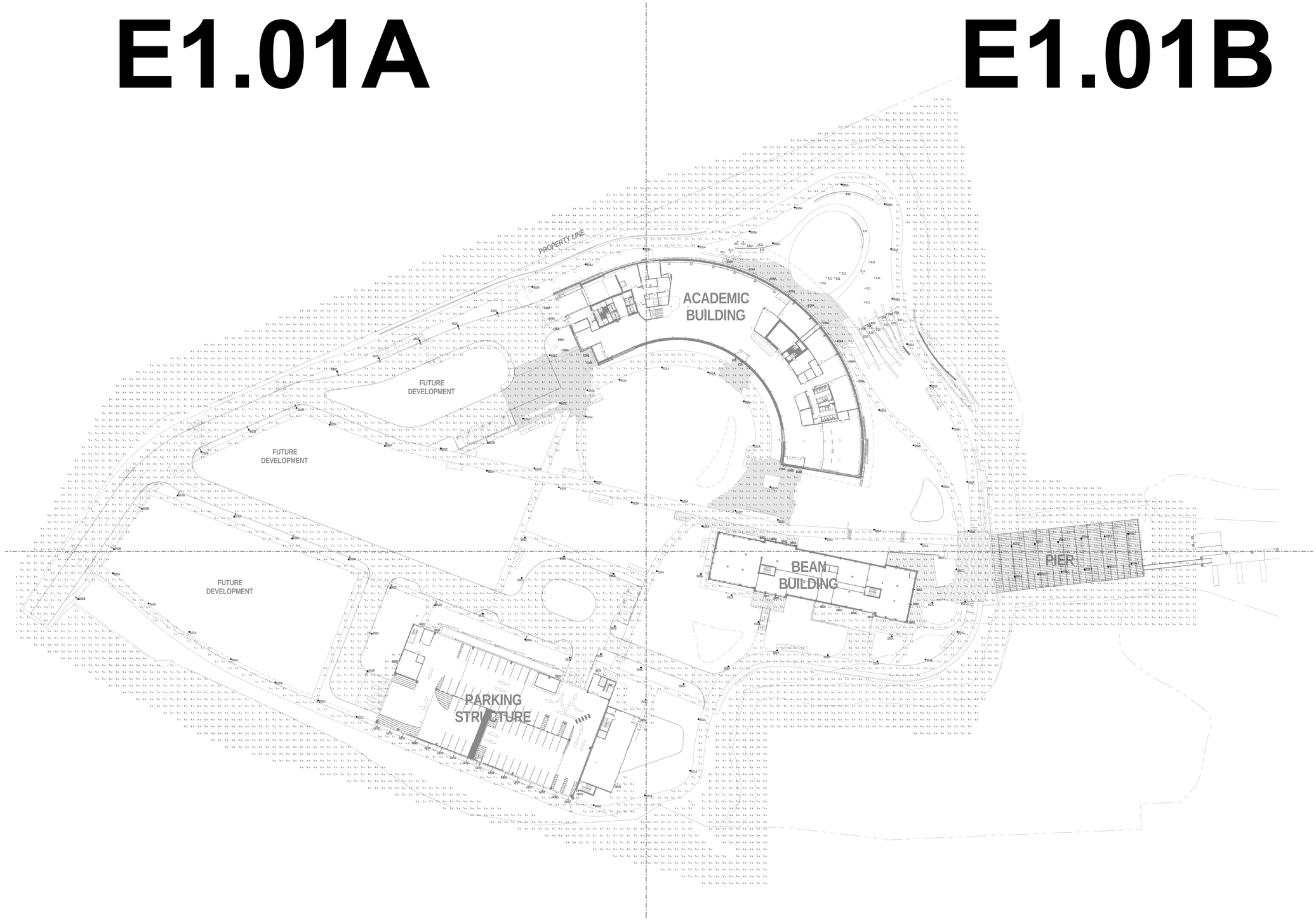
E1.01A

E1.01B



E1.01D

E1.01C

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SITE LIGHTING PHOTOMETRIC KEY PLAN

E1.01

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The City of Portland Technical Manual - Section 12 - Site Lighting (Adopted 3/26/19; Rev. 12/8/20)
Chapter 12 - Site Lighting Standards

12.1. PURPOSE
The intent of this design is to promote and protect public health, safety and general welfare, and encourage the preservation of the natural nighttime outdoor environment. Specifically, the intent of this design is to limit light trespass, glare and light pollution to safeguard adequate safety, night vision, and comfort of the neighboring properties.
This project is a commercial use (not residential, not industrial), and the standards for commercial applications have been applied in all cases.

12.3. GENERAL STANDARDS
Outdoor lighting standards listed below apply to the Site Lighting
- Uniformity: shall not exceed 20:1
- Illumination levels: Min 0.2 (fc), Max 5.0 (fc), Ave 1.25 (fc). Refer to table for actual calculated values for this site, compliant with Maximum and Minimum values. Average illuminance as report in the table.

12.3..3 Lumens:
- No fixture shall exceed 20,000 lumens (± 3%).
Pathways:
- Pathways on this site are mixed-use for pedestrians and cyclists, and illuminated in a consistent manner with pole lights similar in height and lumen output as the X-8B used along Trails/Waterfront (Commercial/Thames Street).
- Handrail lighting provided by E09 lights are recessed into the handrails aimed down at the stairs, and emit no uplight.
- All Pathway poles (Type E01 series) are full-cut off with no uplight distribution.
Residential/ Commercial Pole at 20': 15,000 lumens Maximum Lumens allowed will apply to E02 Series and E03 pole lights for roadway, vehicular drive aisles, and area lighting at the pier.
- E02 and E03 series pole lights are full-cut off with no uplight distribution.

Building Entrance: 3,500 lumens Maximum Lumens allowed will apply to E05 and E06 Series.

12.3.4 Light Trespass: The maximum illumination level at a property line shall not exceed 1.0 (fc) as all site boundaries are non-sensitive areas.

12.3.5 Color Temperature: All exterior lights shall be 3000K.

12.3.6 Full Cut-off Fixtures and Shielding Required. All the lighting fixtures selected are full cutoff and the uplight component of the BUG rating is U0.

12.3.8 Fixture Height:
- Building Mounted/ Entrances: below the roof eave and not to exceed 20 feet, whichever is lower. As only exceptions, E06B will be mounted under the lowest point of the building canopy, at 32ft.
- All the light poles respect the Residential/Commercial Pole height provision (Light sources on Poles at or below 20ft) per the table in 12.3.3.

All site surface parking spaces are considered within the full context of the site lighting and the site illumination standards, and are not considered as separate parking lots for purpose of this site, as parking spaces are adjacent to exit discharge pathways and/or drive-aisles for vehicles and mixed-use pedestrian/cyclist pathways.

12.5.2 ARCHITECTURAL AND SPECIALTY LIGHTING AND UPLIGHTING
- For accent lighting of the Landscape, E11 fixture will be installed upward and aimed on the trees.
- E11 complies with lumen output limit per accent feature (maximum of 2 luminaires per tree to be illuminated), is fully shielded from view off-site, and uses a narrow cone of light for the purpose of confining the light to the object, and mounted within 1ft of the ground.
- Linear tape light fixtures (BB03 and E10) and are installed aimed at the ground and integrated into an architectural details, to eliminate the possibility of uplight, and used only for landscape features as permitted by 14.5.4F2b of the Land Use Code.

Projected hours of use: Sunset to Sunrise. From one hour after close of business until 1 hour before business opening, general site illuminance levels will be dimmed to reduced output.
- All landscape accent lighting fixtures shall automatically turn off from midnight to 6am.
Distance to nearest property line per fixture:
- E01 series: 25ft
- E02 series: 25ft
- E02 series along Sherwood Frontage: 1ft
- E03: no adjacent property (at pier)
- All other luminaires are not adjacent to other properties and do not contribute to illuminance values beyond the property.

The City of Portland Technical Manual - Section 10 (Adopted 3/26/19; Rev. 11/22/22)
Chapter 10 - Municipal Street Lighting Standards
Lighting for Sherwood Street shall comply with the light level requirements in the table in 10.2.1, for Local/Minor Street Classification, with a 0.9 minimum average footcandles, and maximum pole spacing less than 130'.

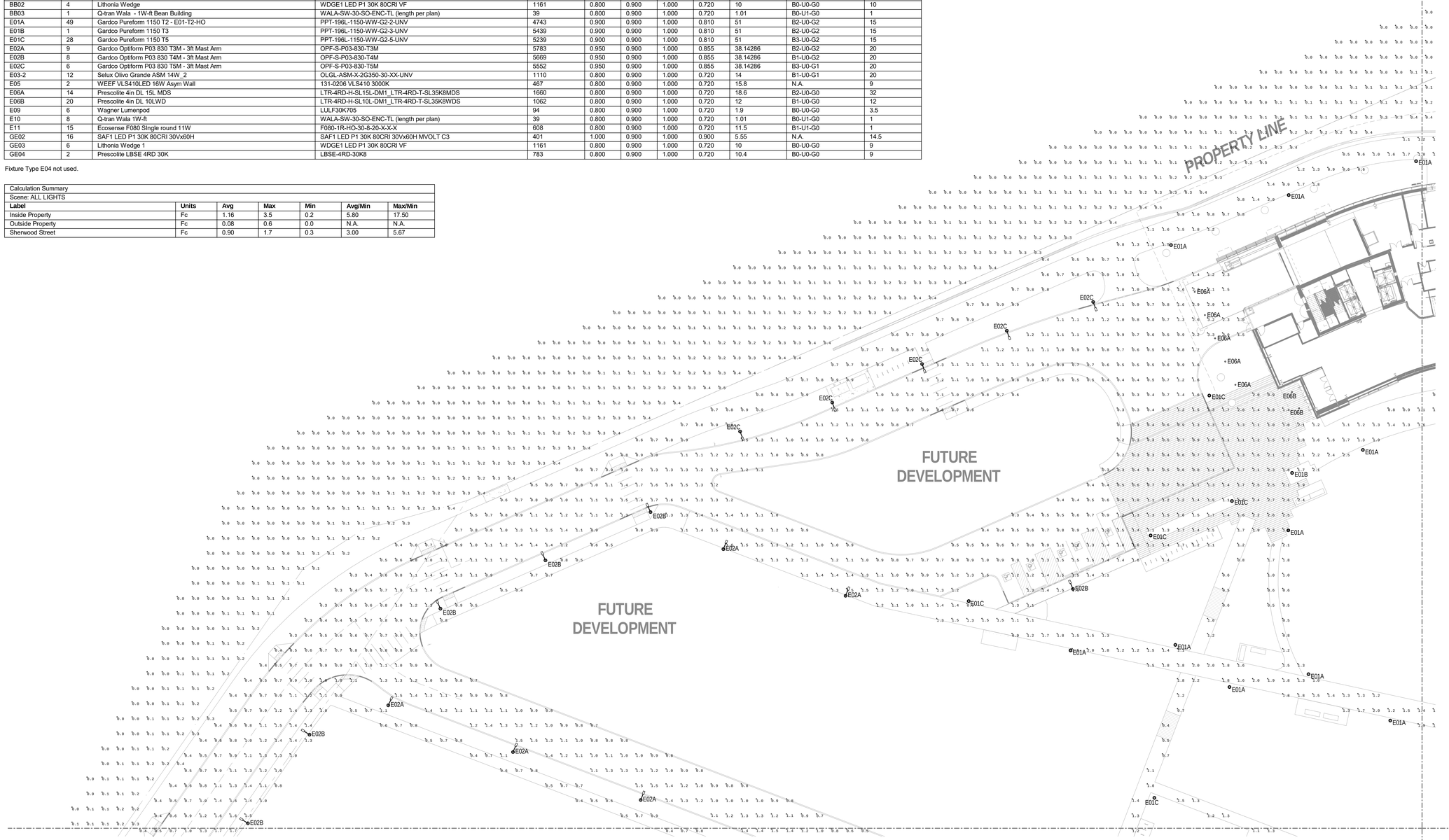
Luminaire Schedule
Scene: ALL LIGHTS

Tag	Qty	Label	Description	Luminaire Lumens	LLD	LDD	UDF	LLF	Luminaire Watts	BUG Rating	Mounting Height
BB01	9	WEEF VLS410LED 16W Asym Wall-	131-0206 VLS410 3000K	467	0.800	0.900	1.000	0.720	15.8	N.A.	9
BB02	4	Lithonia Wedge	WDGE1 LED P1 30K 80CRI VF	1161	0.800	0.900	1.000	0.720	10	B0-U0-G0	10
BB03	1	Q-tran Wala - 1W-ft Bean Building	WALA-SW-30-SO-ENC-TL (length per plan)	39	0.800	0.900	1.000	0.720	1.01	B0-U1-G0	1
E01A	49	Gardco Pureform 1150 T2 - E01-T2-HO	PPT-196L-1150-WW-G2-2-UNV	4743	0.900	0.900	1.000	0.810	51	B2-U0-G2	15
E01B	1	Gardco Pureform 1150 T3	PPT-196L-1150-WW-G2-3-UNV	5439	0.900	0.900	1.000	0.810	51	B2-U0-G2	15
E01C	28	Gardco Pureform 1150 T5	PPT-196L-1150-WW-G2-5-UNV	5239	0.900	0.900	1.000	0.810	51	B3-U0-G2	15
E02A	9	Gardco Optiform P03 830 T3M - 3ft Mast Arm	OPF-S-P03-830-T3M	5783	0.950	0.900	1.000	0.855	38.14286	B2-U0-G2	20
E02B	8	Gardco Optiform P03 830 T4M - 3ft Mast Arm	OPF-S-P03-830-T4M	5669	0.950	0.900	1.000	0.855	38.14286	B1-U0-G2	20
E02C	6	Gardco Optiform P03 830 T5M - 3ft Mast Arm	OPF-S-P03-830-T5M	5552	0.950	0.900	1.000	0.855	38.14286	B3-U0-G1	20
E03-2	12	Selux Olivo Grande ASM 14W_2	OLGL-ASM-X-2G350-30-XX-UNV	1110	0.800	0.900	1.000	0.720	14	B1-U0-G1	20
E05	2	WEEF VLS410LED 16W Asym Wall	131-0206 VLS410 3000K	467	0.800	0.900	1.000	0.720	15.8	N.A.	9
E06A	14	Prescolite 4in DL 15L MDS	LTR-4RD-H-SL15L-DM1_LTR-4RD-T-SL35K8MDS	1660	0.800	0.900	1.000	0.720	18.6	B2-U0-G0	32
E06B	20	Prescolite 4in DL 10LWD	LTR-4RD-H-SL10L-DM1_LTR-4RD-T-SL35K8WDS	1062	0.800	0.900	1.000	0.720	12	B1-U0-G0	12
E09	6	Wagner Lumenpod	LULF30K705	94	0.800	0.900	1.000	0.720	1.9	B0-U0-G0	3.5
E10	8	Q-tran Wala 1W-ft	WALA-SW-30-SO-ENC-TL (length per plan)	39	0.800	0.900	1.000	0.720	1.01	B0-U1-G0	1
E11	15	Ecosense F080 SIngle round 11W	F080-1R-HO-30-8-20-X-X-X	608	0.800	0.900	1.000	0.720	11.5	B1-U1-G0	1
GE02	16	SAF1 LED P1 30K 80CRI 30Vx60H	SAF1 LED P1 30K 80CRI 30Vx60H MVOLT C3	401	1.000	0.900	1.000	0.900	5.55	N.A.	14.5
GE03	6	Lithonia Wedge 1	WDGE1 LED P1 30K 80CRI VF	1161	0.800	0.900	1.000	0.720	10	B0-U0-G0	9
GE04	2	Prescolite LBSE 4RD 30K	LBSE-4RD-30K8	783	0.800	0.900	1.000	0.720	10.4	B0-U0-G0	9

Fixture Type E04 not used.

Calculation Summary
Scene: ALL LIGHTS

Label	Units	Avg	Max	Min	Avg/Min	Max/Min
Inside Property	Fc	1.16	3.5	0.2	5.80	17.50
Outside Property	Fc	0.08	0.6	0.0	N.A.	N.A.
Sherwood Street	Fc	0.90	1.7	0.3	3.00	5.67



1 SITE LIGHTING PHOTOMETRIC PLAN - PART A
1" = 20'-0"

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Scale	As indicated

Drawing Title
SITE LIGHTING PHOTOMETRIC PLAN - PART A

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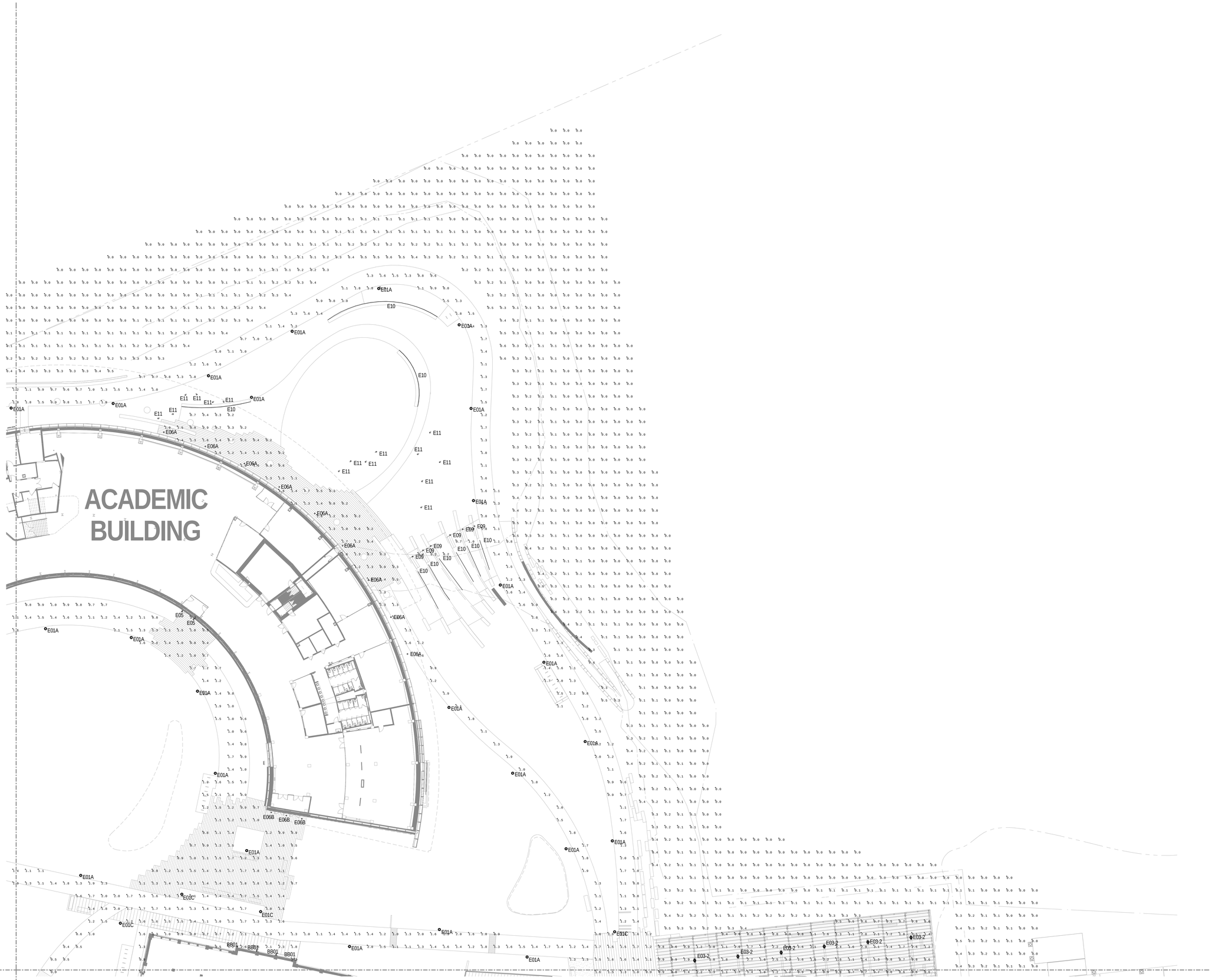

1 SITE LIGHTING PHOTOMETRIC PLAN - PART B
1" = 20'-0"

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SITE LIGHTING PHOTOMETRIC PLAN - PART B

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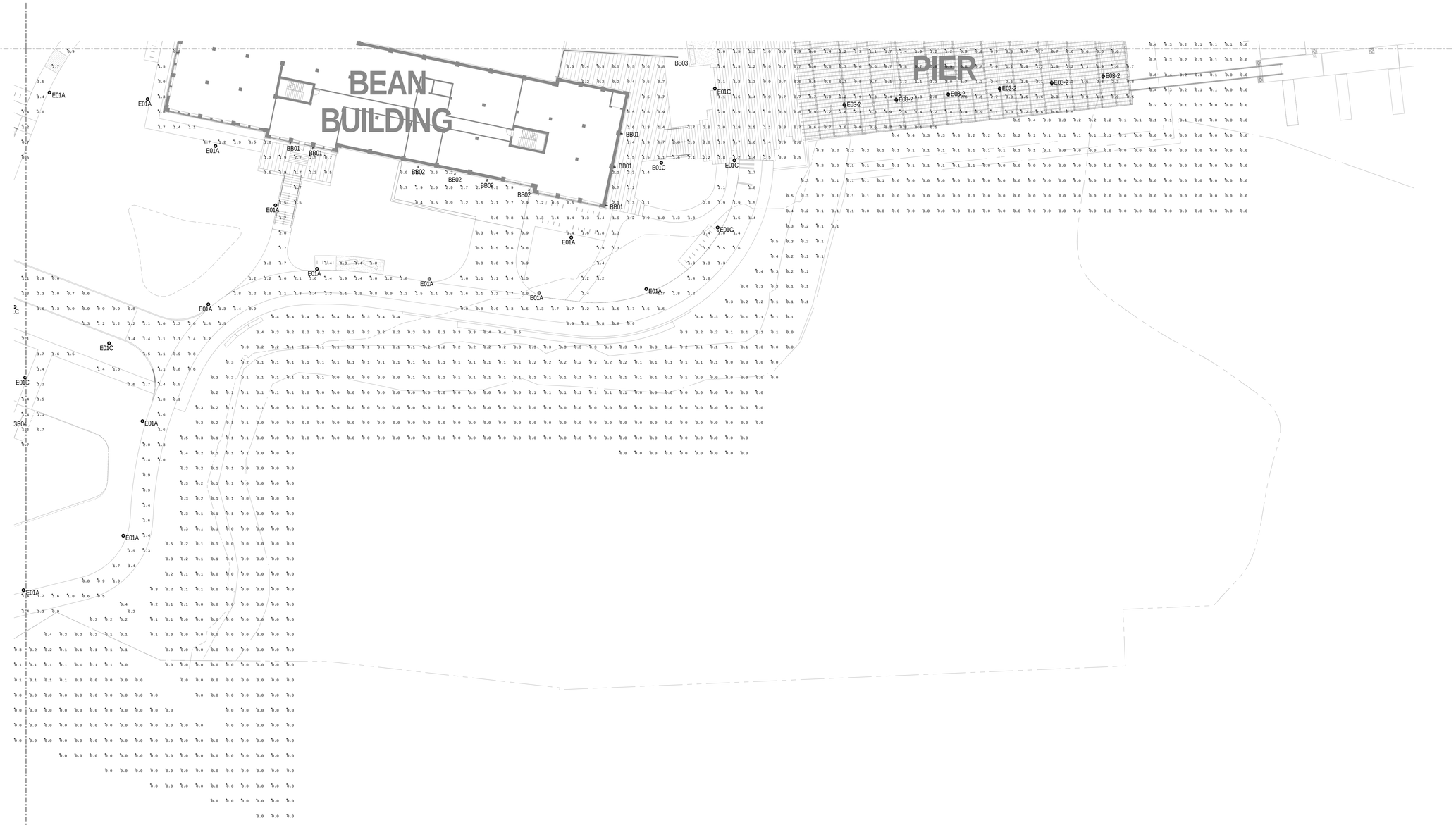

1 SITE LIGHTING PHOTOMETRIC PLAN - PART C
1" = 20'-0"

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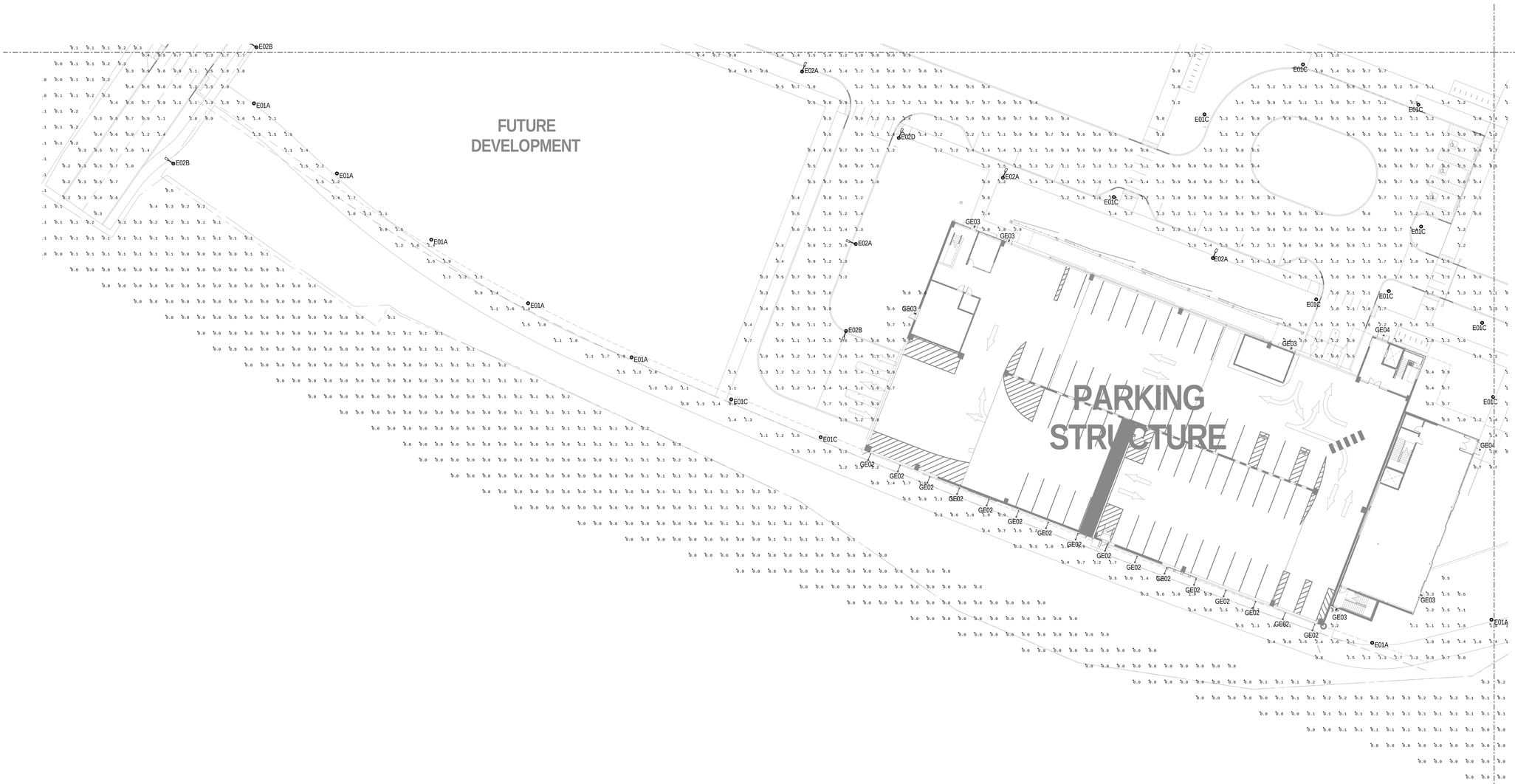

1 SITE LIGHTING PHOTOMETRIC PLAN - PART D
1" = 20'-0"

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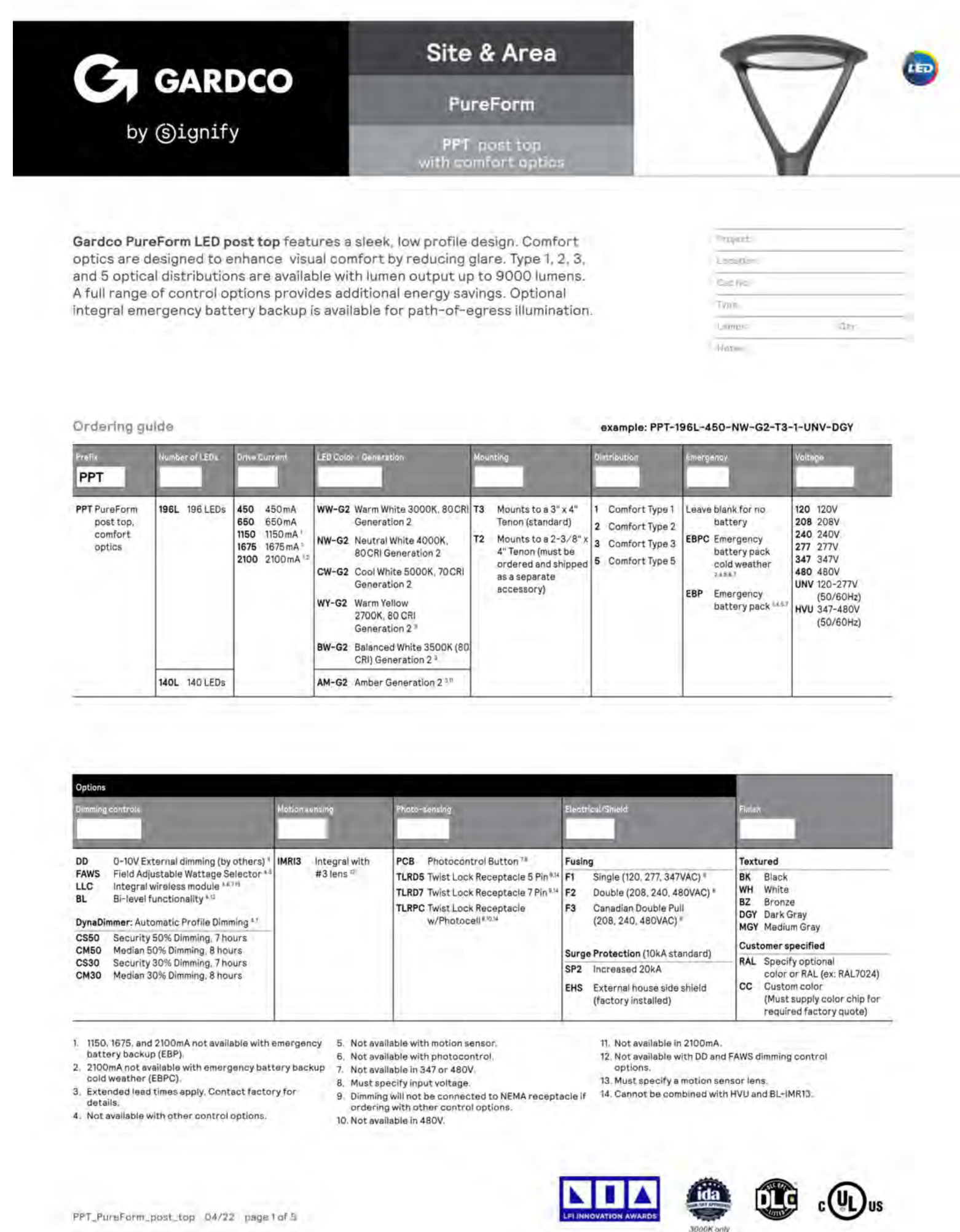
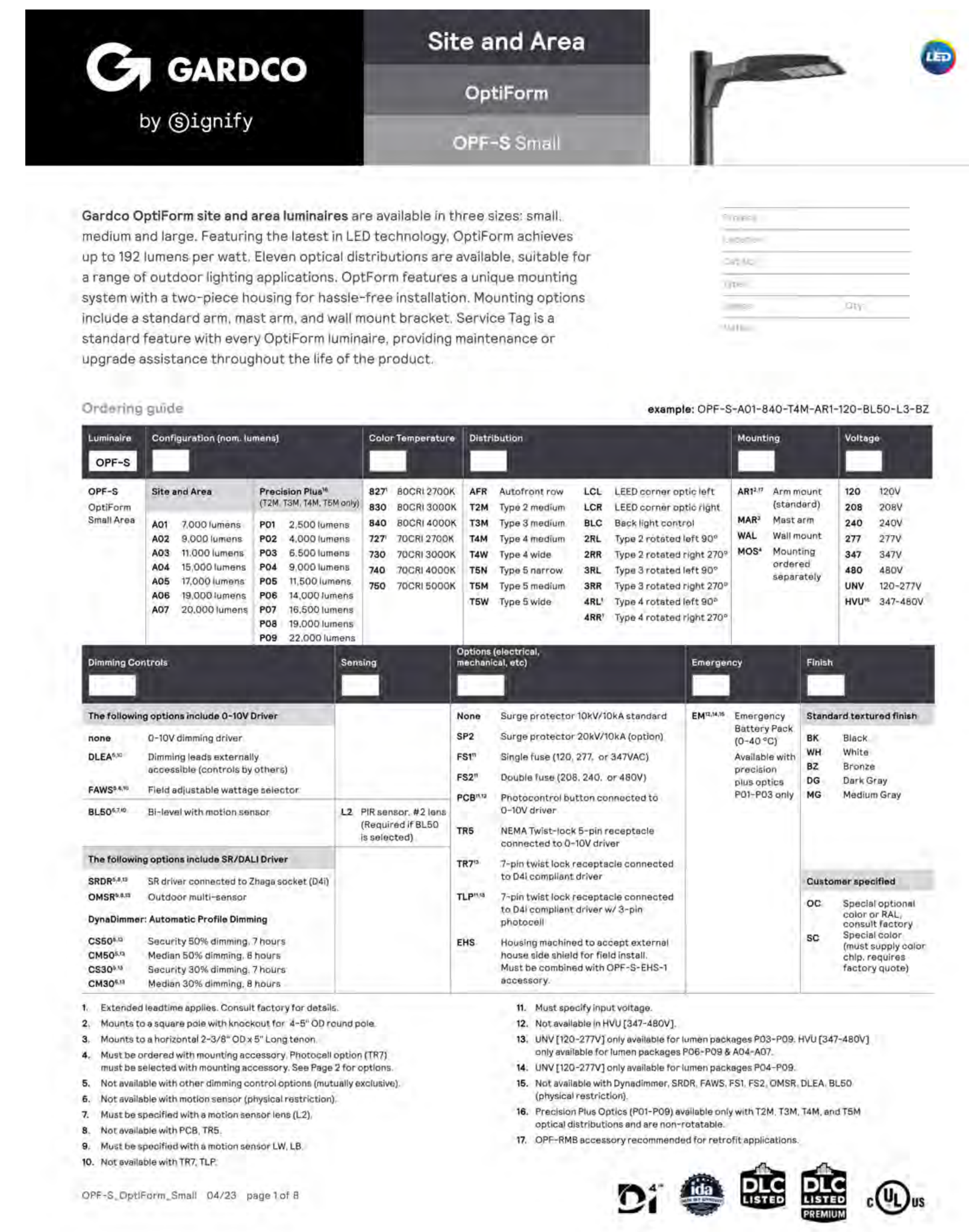


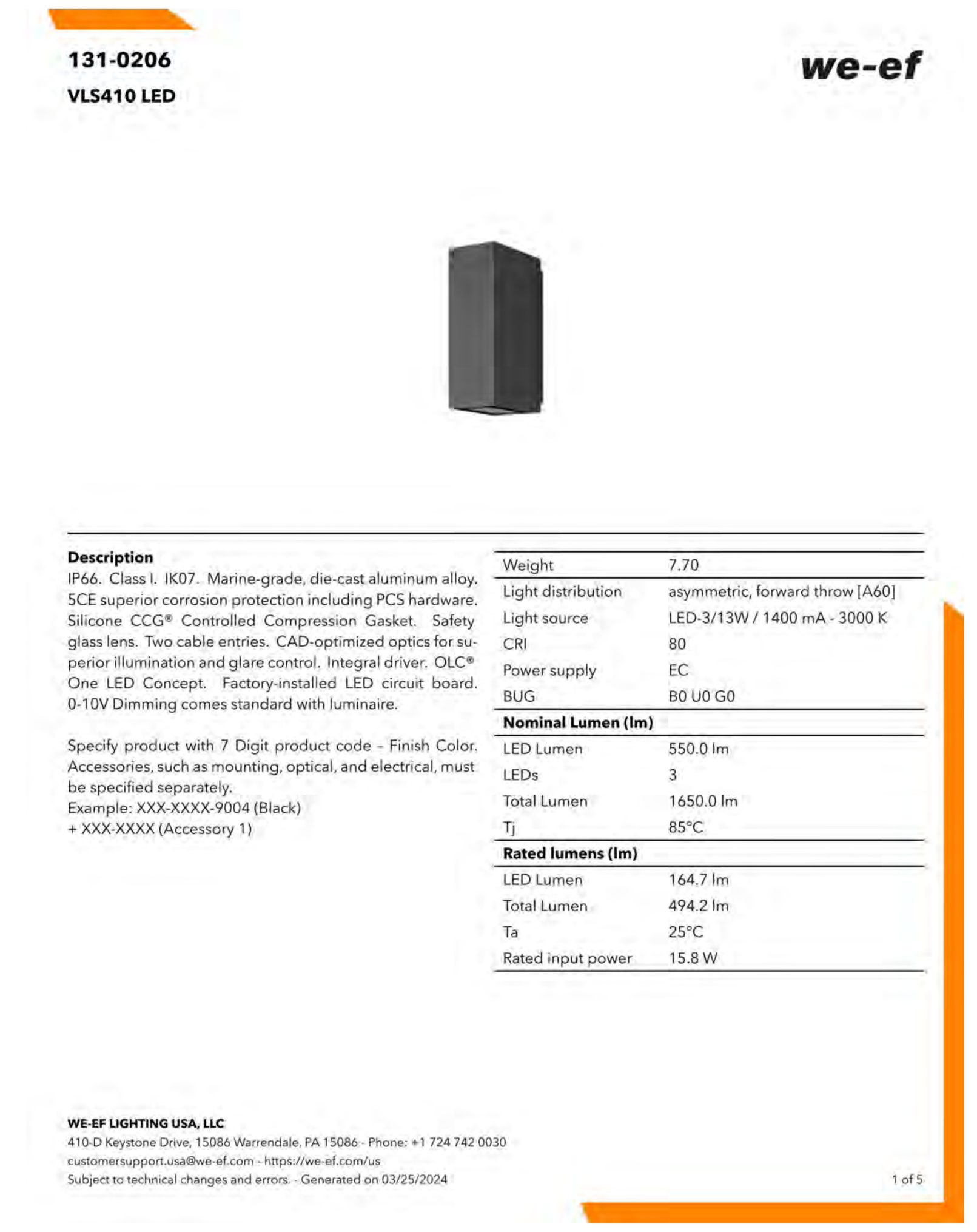
E01 SERIES



E02 SERIES



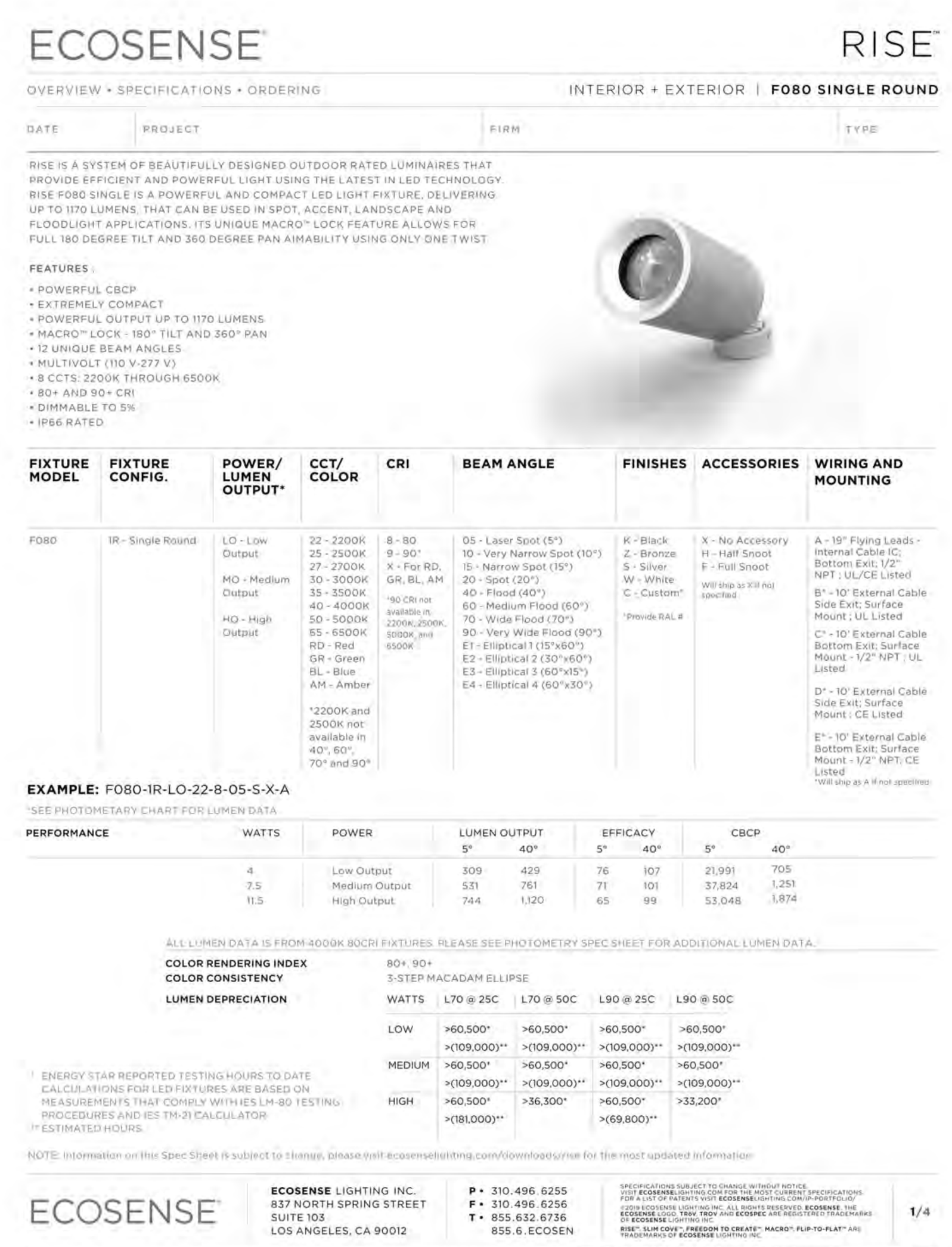
E03



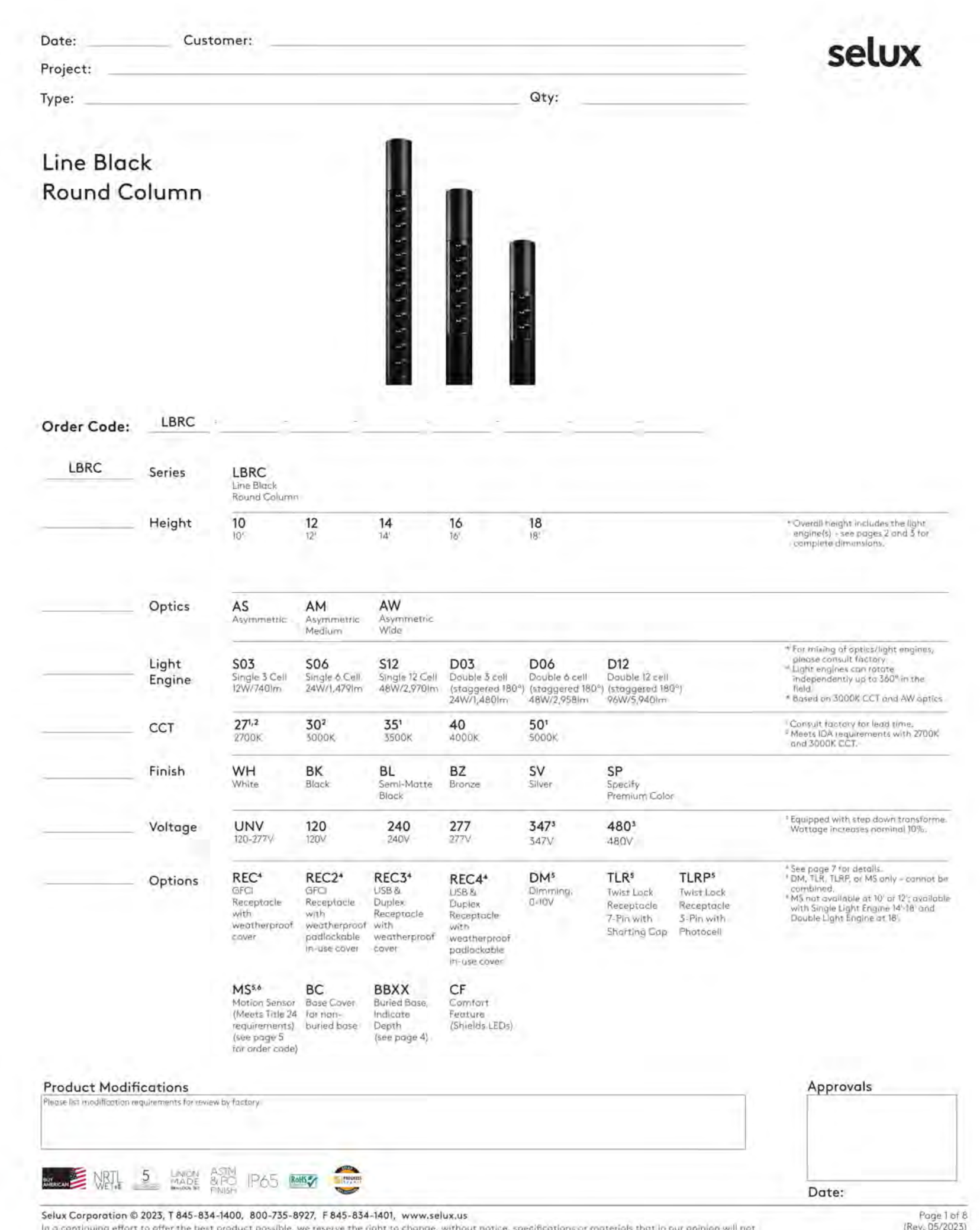
E05



E06 SERIES



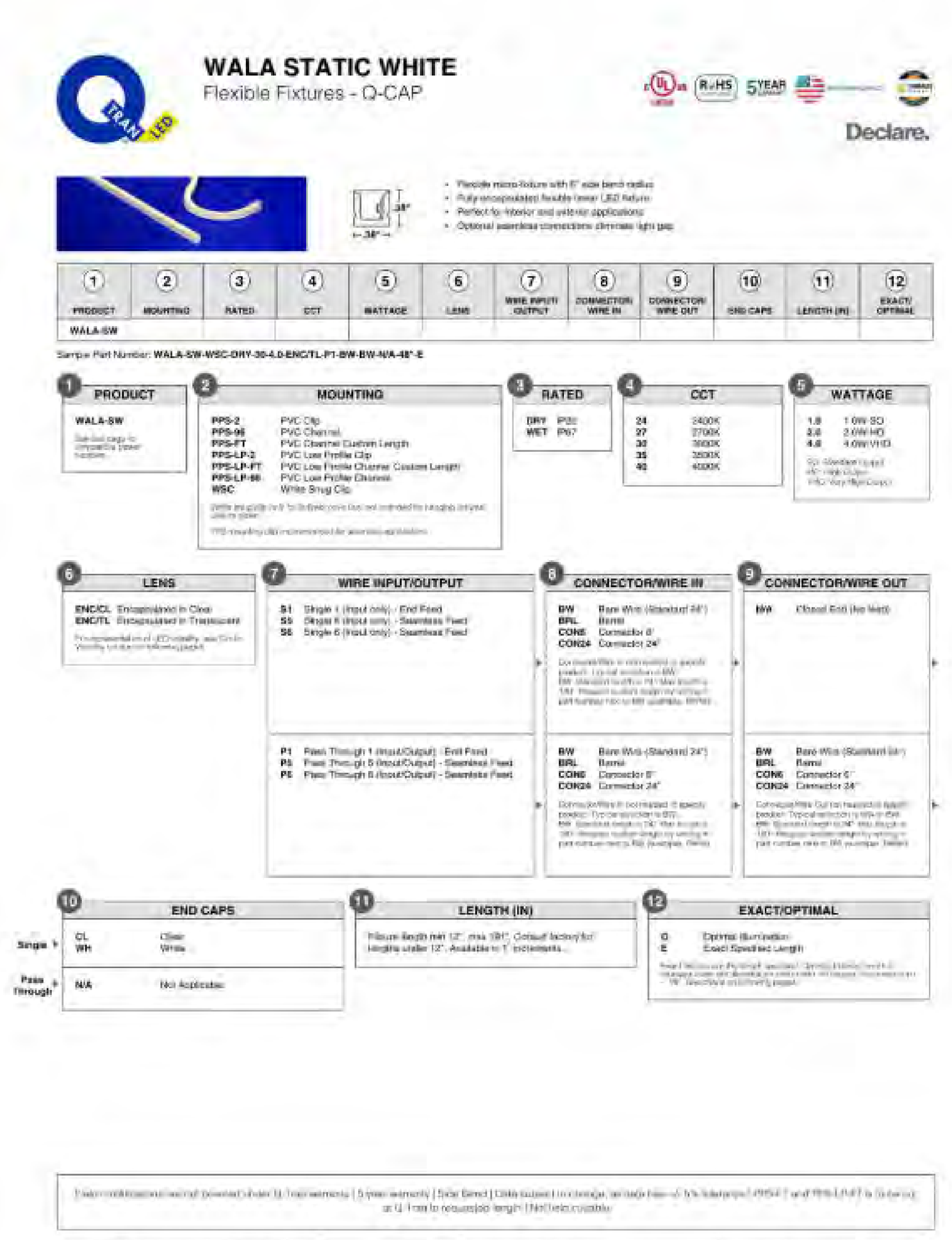
E07
LUMINAIRE AIMED DOWN, WITH
SHIELDING SNOOT ACCESSORY



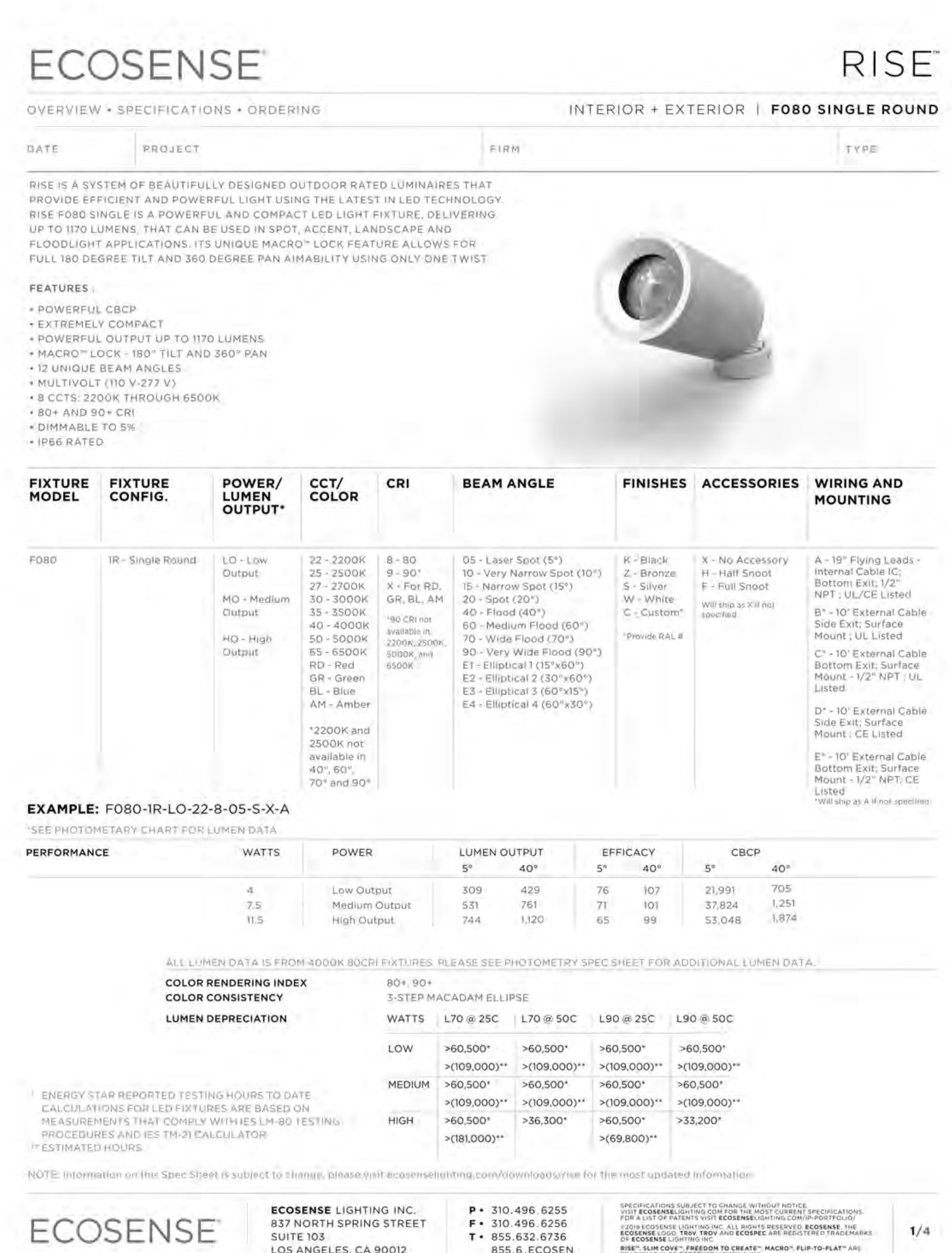
E08



E09



E10
LUMINAIRE AIMED DOWN, CONCEALED
WITHIN ARCHITECTURAL DETAIL



E11
LANDSCAPE ACCENT UPLIGHT WITH
SHIELDING SNOOT ACCESSORY

EXTERIOR LUMINAIRES FOR LRC ACADEMIC BUILDING AND SITE
ALL LUMINAIRES 3000K

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SITE PLAN
SUBMISSION

Number	Revision	Date

STATE OF MAINE
JULIAN ASTBURY
15116
LICENSED PROFESSIONAL ENGINEER

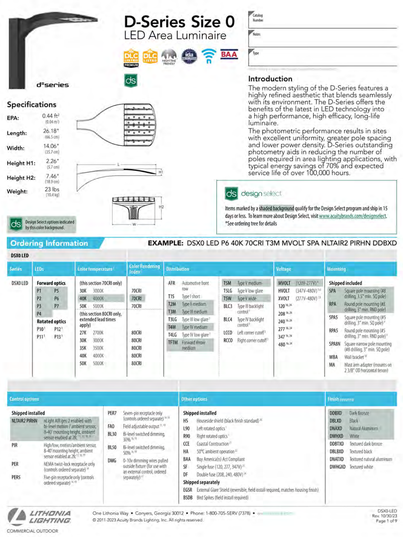
Stamp
03/29/2024

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS Checked JW
Date	March 22, 2024
Scale	NTS

Drawing Title
SITE LIGHTING
SCHEDULES AND
DETAILS SHEET 1

E1.02

3/25/2024 1:44:22 PM

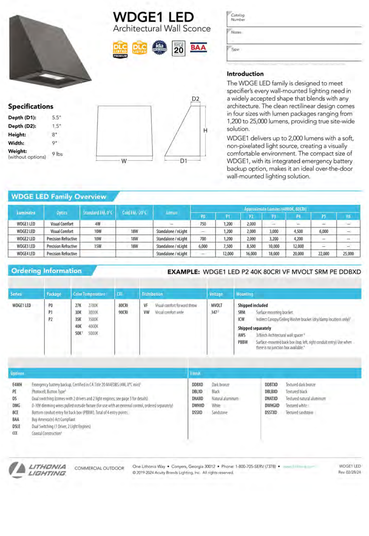


GE01 SERIES

EXTERIOR LIGHTING FOR PARKING GARAGE
ALL LUMINAIRES 3000K



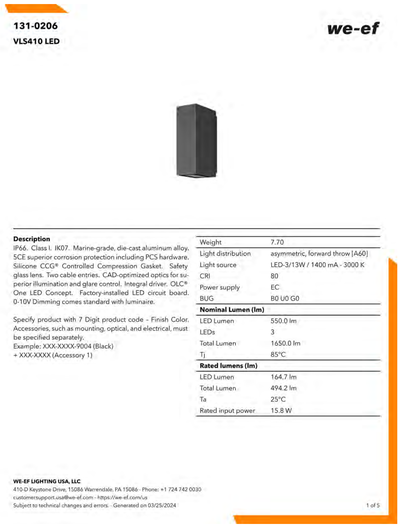
GE02 SERIES
LUMINAIRE AIMED DOWN, WITH
C3 SHIELD ACCESSORY



GE03 SERIES

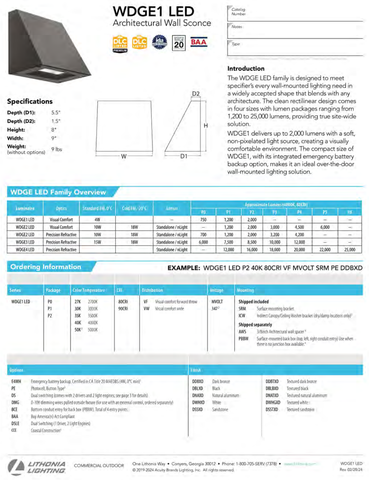


GE04 SERIES

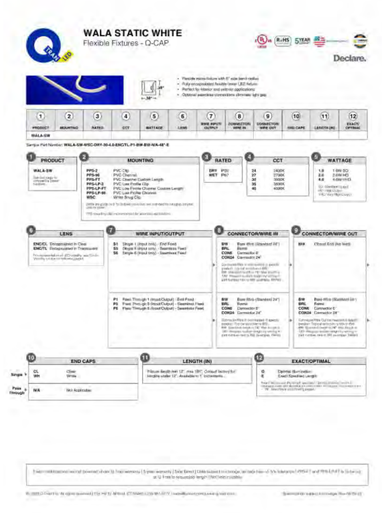


BB01

EXTERIOR LIGHTING FOR BEAN BUILDING
ALL LUMINAIRES 3000K



BB02



BB03
LUMINAIRE AIMED DOWN, CONCEALED WITHIN
ARCHITECTURAL DETAIL

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SITE PLAN SUBMISSION

Number	Revision	Date

STATE OF MAINE
JUSTIN M. STOLWIJK
LICENSED PROFESSIONAL ENGINEER

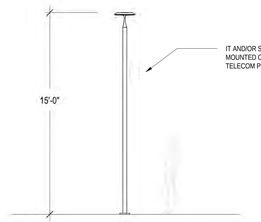
Stamp 03/29/2024

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS Checked JW
Date	27 OCTOBER 2023
Scale	NTS

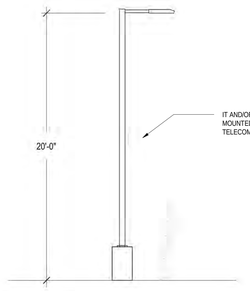
Drawing Title
SITE LIGHTING SCHEDULES AND DETAILS SHEET 2

E1.03

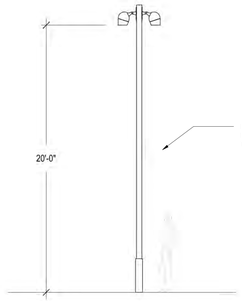
3/25/2024 12:49:37 PM



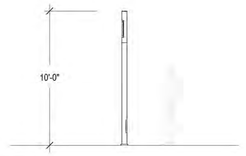
E01 SERIES POLE MOUNTED LUMINAIRES
SCALE: 1/4" = 1'-0"



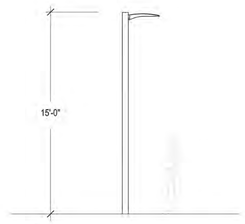
E02 SERIES POLE MOUNTED LUMINAIRES
SCALE: 1/4" = 1'-0"



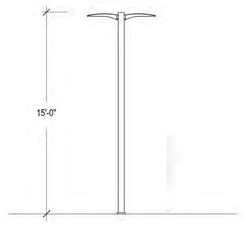
E03-2 POLE MOUNTED LUMINAIRE
SCALE: 1/4" = 1'-0"



E08 POLE MOUNTED LUMINAIRE
SCALE: 1/4" = 1'-0"



GE01 POLE MOUNTED LUMINAIRE
SCALE: 1/4" = 1'-0"



GE01A-2 POLE MOUNTED LUMINAIRE
SCALE: 1/4" = 1'-0"

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SITE PLAN SUBMISSION

Number	Revision	Date

STATE OF MAINE
JOHN WESLEY WOMACK
LICENSED PROFESSIONAL ENGINEER

Stamp

03/29/2024

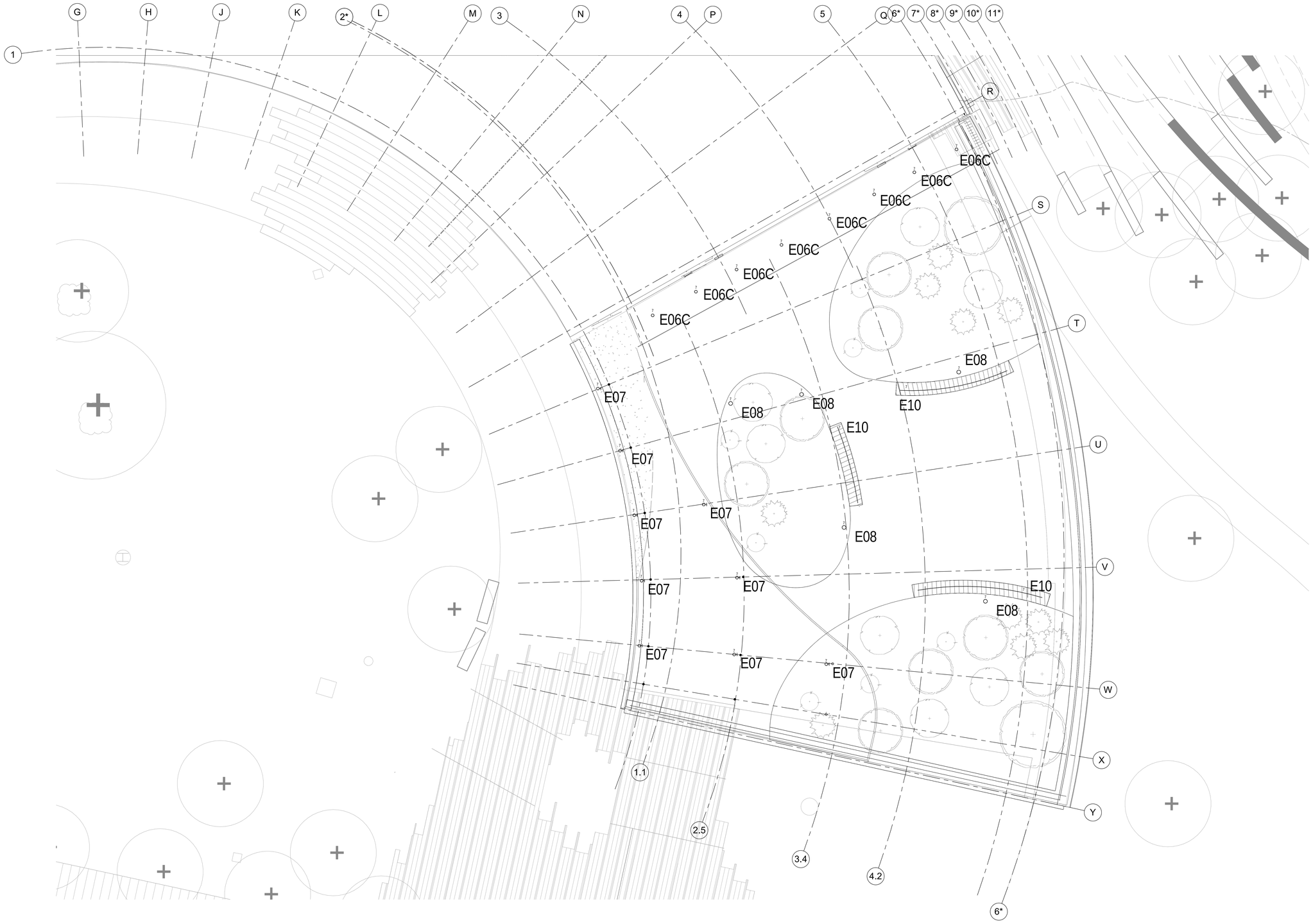
Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS
Checked	JW
Date	March 22, 2024
Scale	1/4" = 1'-0"

Drawing Title

SITE LIGHTING SCHEDULES AND DETAILS SHEET 3

E1.04

3/25/2024 12:49:01 PM



1 SITE LIGHTING - LEVEL 3 TERRACE
1/8" = 1'-0"

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SITE PLAN SUBMISSION

Number	Revision	Date

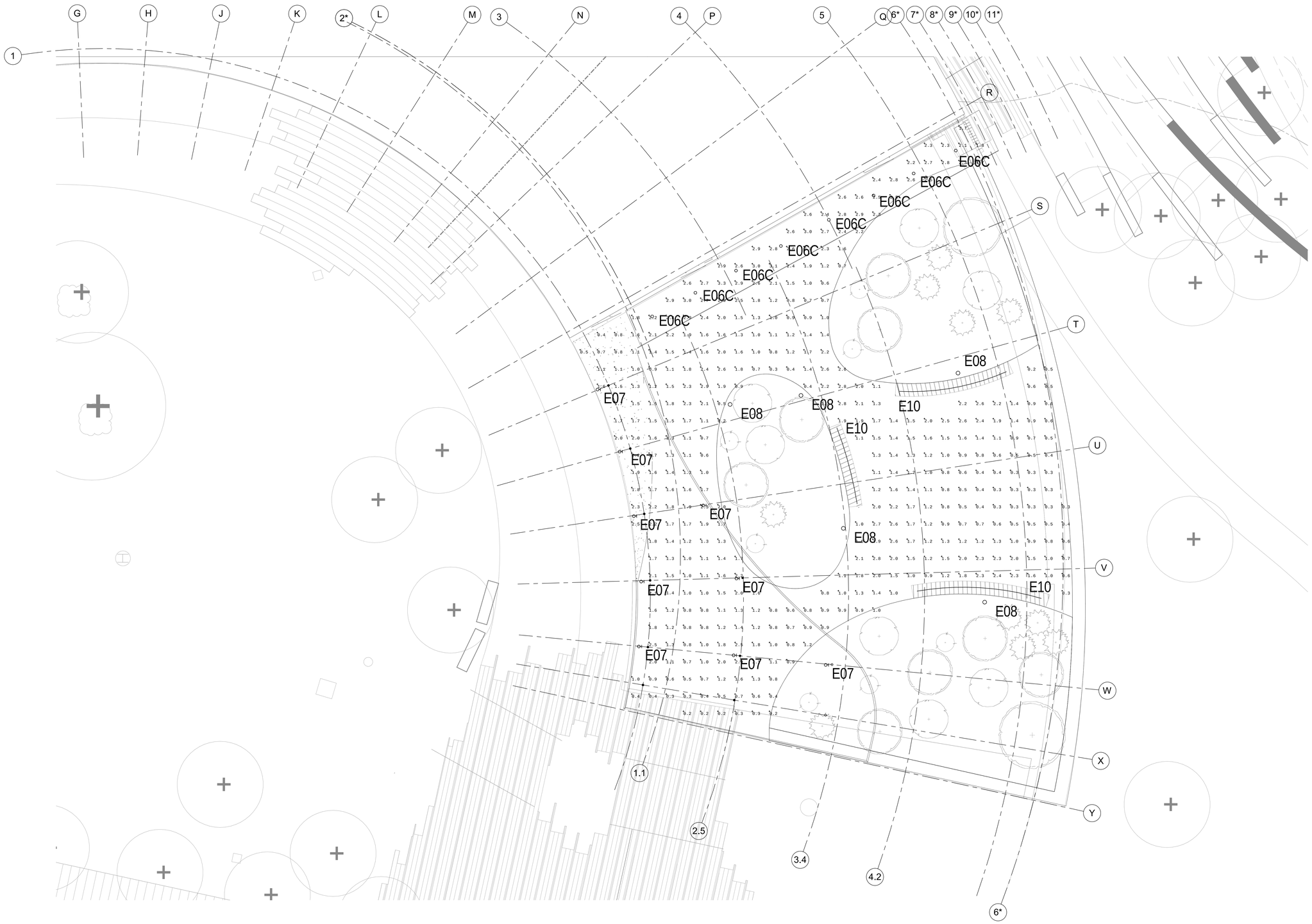
Stamp
03/29/2024

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS
Checked	JW
Date	March 22, 2024
Scale	1/8" = 1'-0"

Drawing Title
SITE LIGHTING - LEVEL 3 TERRACE

E1.05

3/25/2024 12:49:30 PM



The City of Portland Technical Manual - Section 12 - Site Lighting (Adopted 3/26/19; Rev. 12/8/20)

12.1. PURPOSE
The intent of this design is to promote and protect public health, safety and general welfare, and encourage the preservation of the natural nighttime outdoor environment. Specifically, the intent of this design is to limit light trespass, glare and light pollution to safeguard adequate safety, night vision, and comfort of the neighboring properties.

12.3. GENERAL STANDARDS
Outdoor lighting standards listed below apply to the Level 3 Terrace Lighting
• Uniformity: 20:1
• Illumination levels: Min 0.2 (fc), Max 5.0 (fc), Ave 1.25 (fc)
• No fixture shall exceed 20,000 lumens (± 3%).
- Path lighting: 1,500 lumens Maximum Lumens allowed will apply to E08.
- Building Entrance: 3,500 lumens Maximum Lumens allowed will apply to E06C
• Light Trespass: The maximum illumination level at a property line shall not exceed 0.1 (fc)
• Full Cut-off Fixtures and Shielding Required. All the lighting fixtures selected are full cutoff and the uplight component of the BUG rating is U0.
Please note that the E08 is Night Sky friendly with minimum uplight component and U1 rating. The E10
linear tape light fixtures are installed aimed at the ground and integrated into an architectural detail, to eliminate the possibility of uplight. E07 is installed below the trellis structure aimed down.
• Fixture Height:
- All the light poles and bollards respect the height provision (Light sources on Poles at or below 20ft)

Projected hours of use: From 11pm or close of business until 6am general site illuminance levels will be dimmed. All landscape accent lighting fixtures shall automatically turn off from midnight to 6am.

Luminaire Schedule
Scene: Flood Light Scheme

Tag	Qty	Label	Description	Luminaire Lumens	LLD	LDD	UDF	LLF	Luminaire Watts	Arrangement Watts	BUG Rating	Mounting Height
E06C	8	Prescolite LTR	LTR-4RD-H-SL06L-DMTW_LTR-4RD-T-SL2230TD9XWS	571	0.800	0.900	1.000	0.720	10	10	B1-U0-G0	11.454
E07	9	Ecosense WF 11W	F080-1R-HO-30-9-90-X-X-X	708	0.900	0.800	1.000	0.720	11.5	11.5	B1-U1-G0	9, 11, 12, 13.6
E08	5	Linea Black Selux S06 Asymmetric Wide 24W	LRBC-XX-AW-S06-30-XX-UNV	1479	0.900	0.950	1.000	0.855	24	24	B0-U1-G1	10
E10	1	Q-tran Wala 1W-ft	WALA-SW-WSC-DRY-30-SO-ENC-TL_1	39	0.800	0.900	1.000	0.720	1.01	1.01	B0-U1-G0	2

Calculation Summary
Scene: Flood Light Scheme

Label	Units	Avg	Max	Min	Avg/Min	Max/Min
Floor_Planar	Fc	1.46	3.3	0.2	7.30	16.50

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SITE PLAN SUBMISSION

Number	Revision	Date

STATE OF MAINE · JOHN ALTOBELLI · LICENSED PROFESSIONAL ENGINEER

03/29/2024

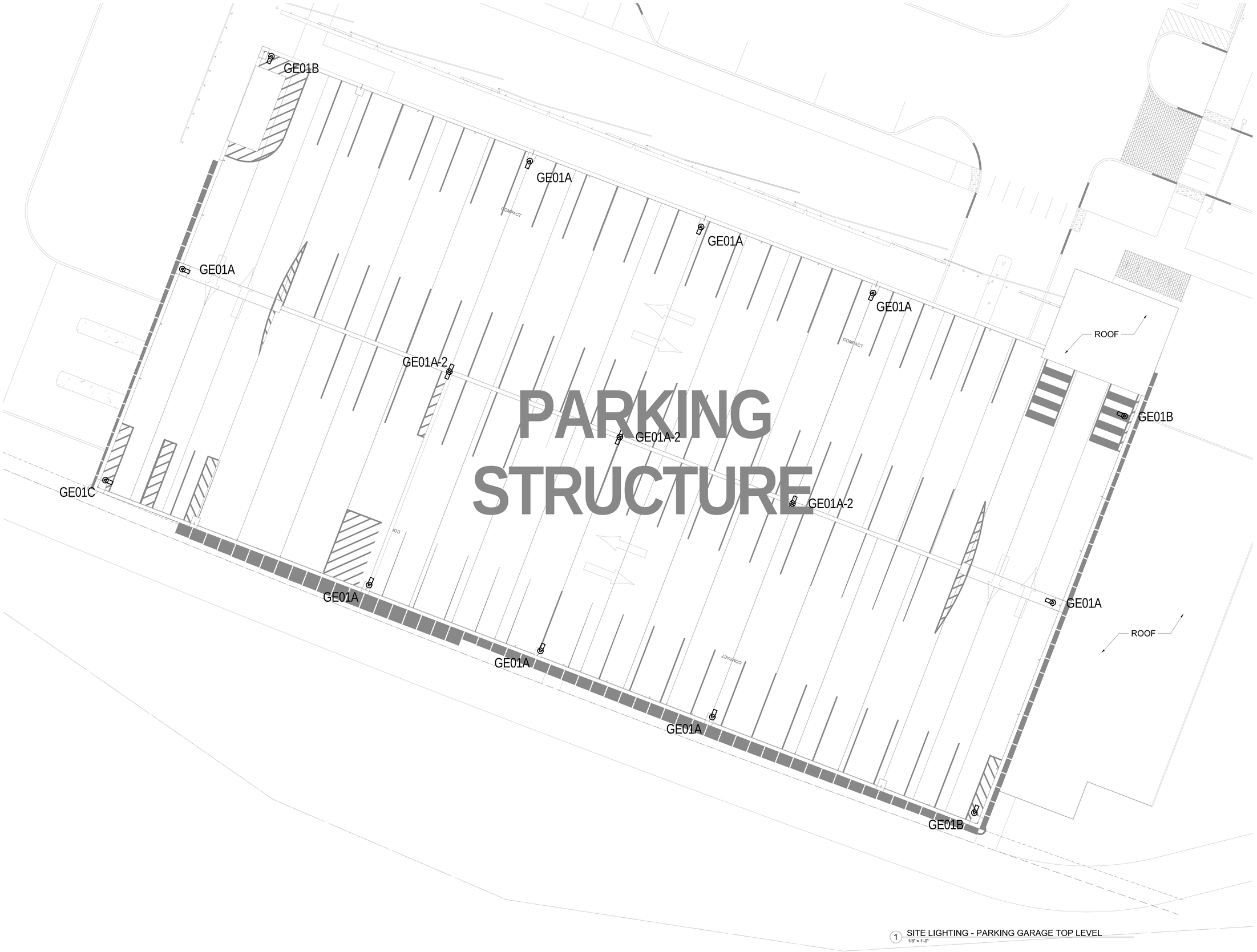
Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS
Checked	JW
Date	March 22, 2024
Scale	1/8"=1'-0"

Drawing Title
SITE LIGHTING - LEVEL 3 TERRACE PHOTOMETRIC PLAN

E1.06

3/25/2024 12:49:34 PM



1 SITE LIGHTING - PARKING GARAGE TOP LEVEL
1/8" = 1'-0"

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SITE PLAN SUBMISSION

Number	Revision	Date

STATE OF MAINE
JUN
LICENSED
PROFESSIONAL ENGINEER

03/29/2024

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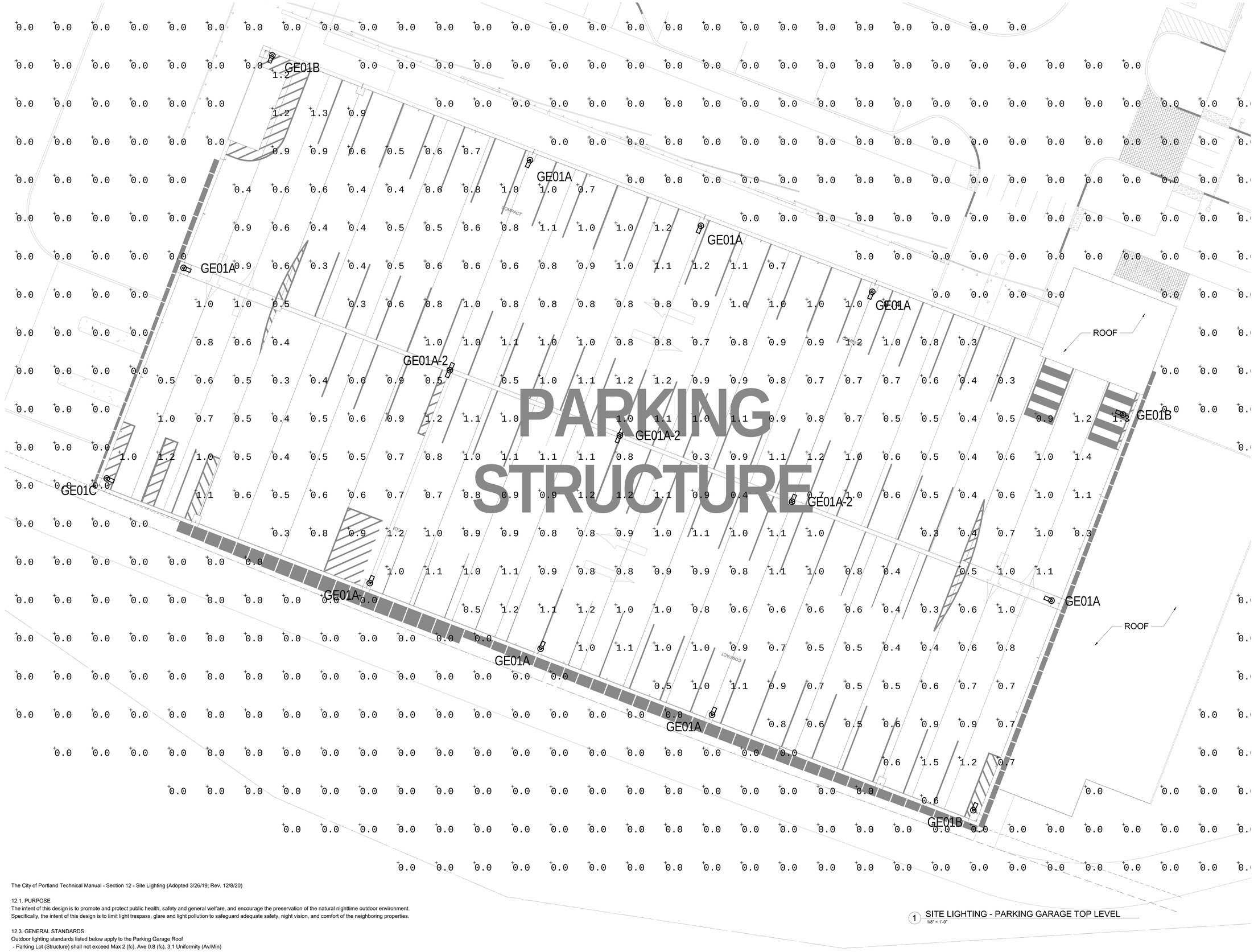
Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS Checked JW
Date	March 22, 2024
Scale	1/8" = 1'-0"

Drawing Title
SITE LIGHTING - PARKING GARAGE TOP LEVEL

E1.07

3/25/2024 12:49:31 PM



1 SITE LIGHTING - PARKING GARAGE TOP LEVEL
1/8" = 1'-0"

The City of Portland Technical Manual - Section 12 - Site Lighting (Adopted 3/26/19; Rev. 12/8/20)

12.1. PURPOSE
The intent of this design is to promote and protect public health, safety and general welfare, and encourage the preservation of the natural nighttime outdoor environment. Specifically, the intent of this design is to limit light trespass, glare and light pollution to safeguard adequate safety, night vision, and comfort of the neighboring properties.

12.3. GENERAL STANDARDS
Outdoor lighting standards listed below apply to the Parking Garage Roof
- Parking Lot (Structure) shall not exceed Max 2 (fc), Ave 0.8 (fc), 3:1 Uniformity (Av/Min)
- No fixture shall exceed 20,000 lumens (± 3%).
  - Residential/ Commercial Pole at 20' : 15,000 lumens Maximum Lumens allowed will apply to GE01 Series.
  - Full Cut-off Fixtures and Shielding Required. All the lighting fixtures selected are full cutoff and the uplight component of the BUG rating is U0.
- Fixture Color Temperature: All lights shall be 3000K.
- Fixture Height:
  - All the light poles at the garage roof deck are 15ft height above floor and respect the height provision (Light sources on Poles at or below 20ft)

Projected hours of use:
- Sunset to Sunrise.
- From one hour after close of business until 1 hour before business opening, illuminance levels will be dimmed to 50%.

All calculation points on the parking structure are at the floor level. All calculation points outside of the parking structure are at ground level.
- Luminaires at top deck of parking structure contribute no light to the ground plane or beyond the site property.

Calculation Summary

Label	Units	Avg	Max	Min	Avg/Min	Max/Min
Parking Structure Ground Level	Fc	0.00	0.0	0.0	N.A.	N.A.
Parking Structure_Top	Fc	0.79	1.5	0.3	2.63	5.00

Luminaire Schedule

Tag	Qty	Label	Description	Luminaire Lumens	LLD	LDD	UDF	LLF	Luminaire Watts	BUG Rating
GE01A	14	D-Series Size 0 BLC4 EGS	DSX0 LED P1 30K 80CRI BLC4 EGS-F	1610	0.900	0.900	1.000	0.810	33.21	B0-U0-G1
GE01B	3	D-Series Size 0 RCCO EGS	DSX0 LED P1 30K 80CRI RCCO EGS-F Derated for 70% output	1844	0.900	0.900	0.700	0.567	33.21	B0-U0-G0
GE01C	1	D-Series Size 0 LCCO EGS	DSX0 LED P1 30K 80CRI LCCO EGS-F Derated for 70% output	1844	0.900	0.900	0.700	0.567	33.21	B0-U0-G0

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SITE PLAN SUBMISSION

Number	Revision	Date

STATE OF MAINE — JOHN WESLEY — LICENSED PROFESSIONAL ENGINEER

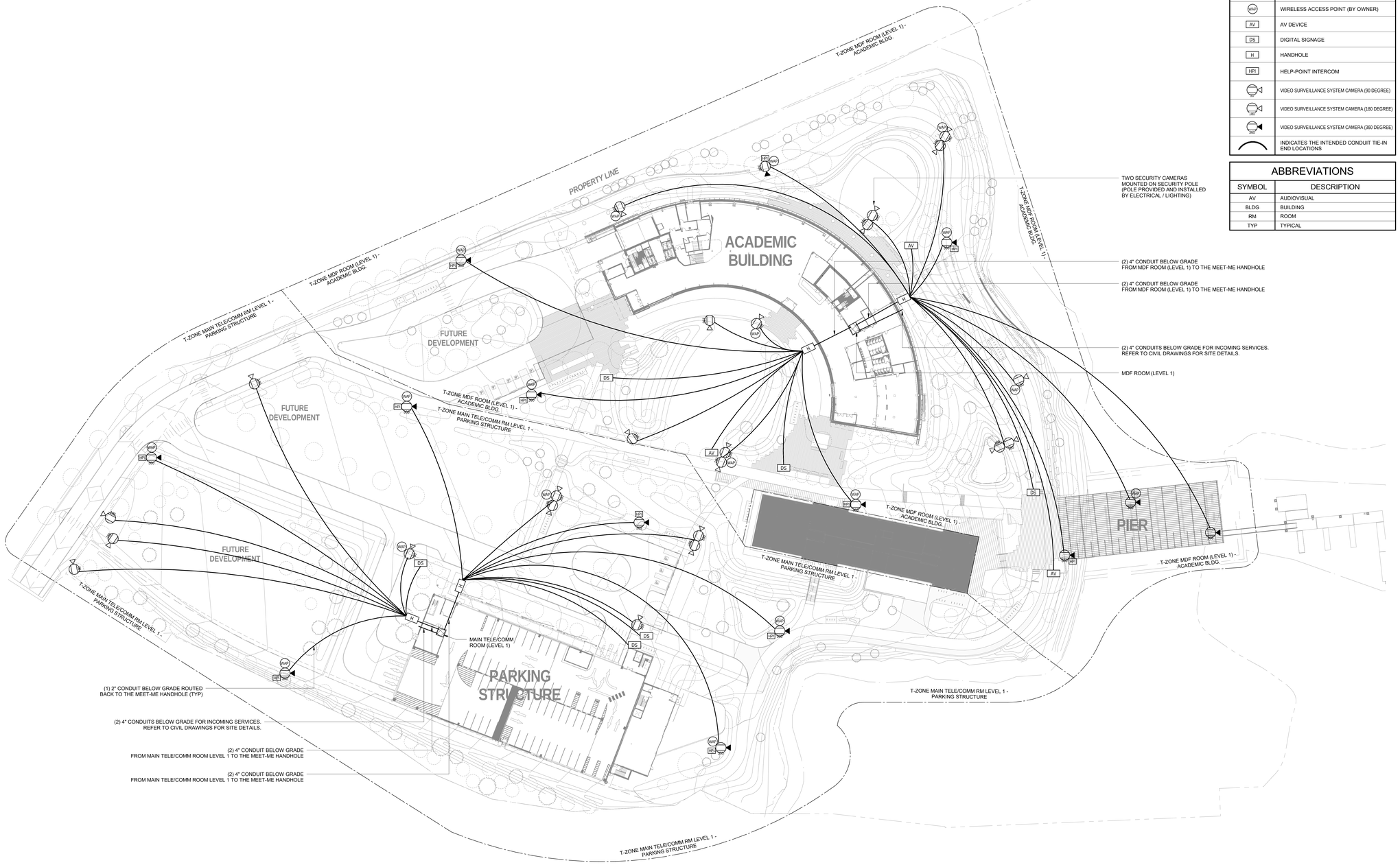
03/29/2024

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	CS Checked JW
Date	March 22, 2024
Scale	1/8"=1'-0"

Drawing Title
SITE PHOTOMETRIC PLAN - PARKING GARAGE TOP LEVEL

E1.08

3/25/2024 12:49:35 PM



LEGEND:	
SYMBOL	DESCRIPTION
	TELECOM SPACES/ROOM OUTLINE
T-ZONE IT RM-#	TELECOM ZONE SERVED BY IT ROOM # = NUMBER/NAME
WAP	WIRELESS ACCESS POINT (BY OWNER)
AV	AV DEVICE
DS	DIGITAL SIGNAGE
H	HANDHOLE
HPI	HELP-POINT INTERCOM
90°	VIDEO SURVEILLANCE SYSTEM CAMERA (90 DEGREE)
180°	VIDEO SURVEILLANCE SYSTEM CAMERA (180 DEGREE)
360°	VIDEO SURVEILLANCE SYSTEM CAMERA (360 DEGREE)
	INDICATES THE INTENDED CONDUIT TIE-IN END LOCATIONS

ABBREVIATIONS	
SYMBOL	DESCRIPTION
AV	AUDIOVISUAL
BLDG	BUILDING
RM	ROOM
TYP	TYPICAL

NOTES:

1. REFER TO SECURITY DRAWINGS FOR SECURITY SYMBOL LEGEND DETAILS.
2. ALL EXTERIOR DEVICES SHOWN ON PLAN SHALL BE MOUNTED ON LIGHT POLES (POLES BY LIGHTING/ELECTRICAL), UNLESS:
   A. MOUNTED ON SECURITY POLE, AS INDICATED ON PLAN
   B. COLOCATED WITH HELP-POINT INTERCOM
3. BACKBONE AND INCOMING SERVICE PATHWAY DUCT BANKS ARE TO BE CONCRETE ENCASED, 4" PVC MATERIAL, USE MAXCELL FLEXIBLE FABRIC INNERDUCT SYSTEM EQUIPPED WITH PULL CORD.
4. HORIZONTAL DEVICE PATHWAYS ARE TO BE DIRECT BURIED CONDUITS OF UP TO 2" AS REQUIRED.
5. MINIMUM DEPTH FROM TOP OF THE CONDUIT MUST BE BURIED AT LEAST 24" BELOW THE GROUND SURFACE/FINISHED GRADE. IN AREAS WHERE FROST CONDITIONS COULD DAMAGE CABLES IN CONDUITS, AS A MINIMUM, THE DEPTH SHOULD BE BASED ON 50-YEAR FROST LINE.
6. THE MINIMUM BEND RADIUS FOR A CONDUIT THAT IS 2" OR LESS IN DIAMETER SHALL BE 6 TIMES THE INTERNAL CONDUIT DIAMETER. IF THE CONDUIT IS LARGER THAN 2" THE BEND RADIUS SHALL BE 10 TIMES THE INTERNAL DIAMETER OF THE CONDUIT.
7. PROVIDE A HANDHOLE IN CONDUIT RUNS SUCH THAT:
   A. MAXIMUM CONTINUOUS CONDUIT RUN SHALL NOT EXCEED 600FT
   B. NO MORE THAN TWO 90 DEGREE BENDS EXIST IN A CONTINUOUS CONDUIT RUN
   C. AT LEAST ONE HANDHOLE PER REVERSE (U-SHAPED) BEND IN CONDUIT RUN
   D. IT IS LOCATED IN THE STRAIGHT SECTION OF A CONDUIT AND NOT IN LIEU OF A BEND
   E. SIZE THE HANDHOLE ACCORDINGLY AND PER TIA STANDARDS
8. CONDUIT ENTRY INTO THE HANDHOLE SHALL BE SUCH THAT THE CONDUITS END ON OPPOSIDE ENDS OF THE HANDHOLE AND AT THE SAME ELEVATION, AND NOT ON THE SIDEWALLS

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SITE PLAN SUBMISSION

Number	Revision	Date



03/29/2024
Stamp

Job #	2102
Project	THE ROUX INSTITUTE
Drawn By	NJ
Checked	CJT
Date	March 22, 2024
Scale	1" = 40'-0"

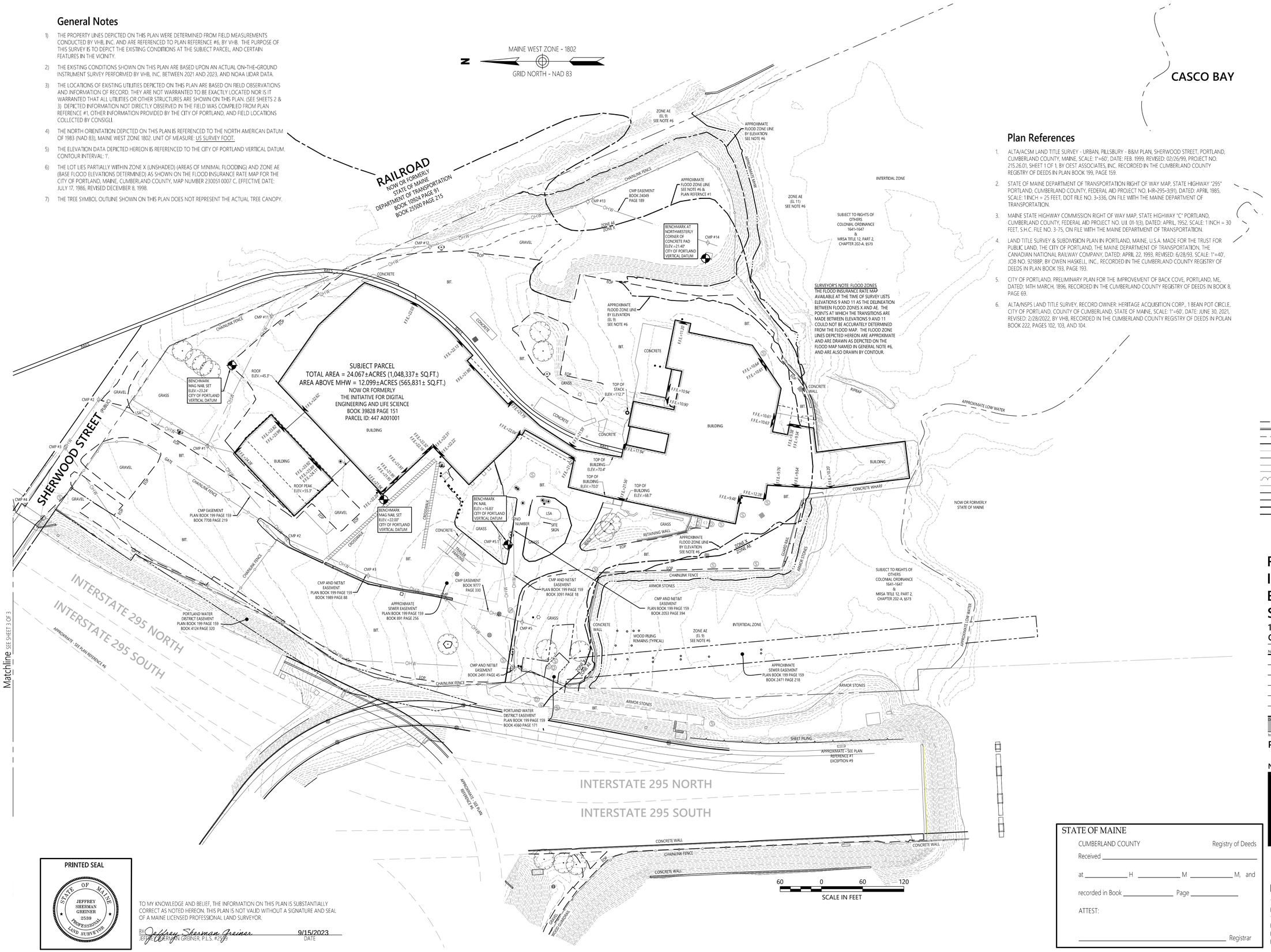
Drawing Title
TELECOM SITE PLAN

T1.01

3/25/2024 4:03:13 PM

General Notes

1) THE PROPERTY LINES DEPICTED ON THIS PLAN WERE DETERMINED FROM FIELD MEASUREMENTS CONDUCTED BY VHB, INC. AND ARE REFERENCED TO PLAN REFERENCE #6, BY VHB. THE PURPOSE OF THIS SURVEY IS TO DEPICT THE EXISTING CONDITIONS AT THE SUBJECT PARCEL, AND CERTAIN FEATURES IN THE VICINITY.
2) THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY VHB, INC. BETWEEN 2021 AND 2023, AND NOAA LIDAR DATA.
3) THE LOCATIONS OF EXISTING UTILITIES DEPICTED ON THIS PLAN ARE BASED ON FIELD OBSERVATIONS AND INFORMATION OF RECORD. THEY ARE NOT WARRANTED TO BE EXACTLY LOCATED NOR IS IT WARRANTED THAT ALL UTILITIES OR OTHER STRUCTURES ARE SHOWN ON THIS PLAN. (SEE SHEETS 2 & 3) DEPICTED INFORMATION NOT DIRECTLY OBSERVED IN THE FIELD WAS COMPILED FROM PLAN REFERENCE #1, OTHER INFORMATION PROVIDED BY THE CITY OF PORTLAND, AND FIELD LOCATIONS COLLECTED BY CONSIGLI.
4) THE NORTH ORIENTATION DEPICTED ON THIS PLAN IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD 83), MAINE WEST ZONE 1802. UNIT OF MEASURE: US SURVEY FOOT.
5) THE ELEVATION DATA DEPICTED HEREON IS REFERENCED TO THE CITY OF PORTLAND VERTICAL DATUM. CONTOUR INTERVAL: 1'.
6) THE LOT LIES PARTIALLY WITHIN ZONE X (UNSHADED) (AREAS OF MINIMAL FLOODING) AND ZONE AE (BASE FLOOD ELEVATIONS DETERMINED) AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR THE CITY OF PORTLAND, MAINE, CUMBERLAND COUNTY, MAP NUMBER 230051 0007 C, EFFECTIVE DATE: JULY 17, 1986, REVISED DECEMBER 8, 1998.
7) THE TREE SYMBOL OUTLINE SHOWN ON THIS PLAN DOES NOT REPRESENT THE ACTUAL TREE CANOPY.



Plan References

1. ALTA/ACSM LAND TITLE SURVEY - URBAN, PILLSBURY - B&M PLAN, SHERWOOD STREET, PORTLAND, CUMBERLAND COUNTY, MAINE, SCALE: 1"=60', DATE: FEB. 1999, REVISED: 02/26/99, PROJECT NO. 215.26.01, SHEET 1 OF 1, BY OEST ASSOCIATES, INC. RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 199, PAGE 159.
2. STATE OF MAINE DEPARTMENT OF TRANSPORTATION RIGHT OF WAY MAP, STATE HIGHWAY "295" PORTLAND, CUMBERLAND COUNTY, FEDERAL AID PROJECT NO. I-IR-295-3(91), DATED: APRIL 1985, SCALE: 1 INCH = 25 FEET, DOT FILE NO. 3-336, ON FILE WITH THE MAINE DEPARTMENT OF TRANSPORTATION.
3. MAINE STATE HIGHWAY COMMISSION RIGHT OF WAY MAP, STATE HIGHWAY "C" PORTLAND, CUMBERLAND COUNTY, FEDERAL AID PROJECT NO. U.I. 01-1(3), DATED: APRIL, 1952, SCALE: 1 INCH = 30 FEET, S.H.C. FILE NO. 3-75, ON FILE WITH THE MAINE DEPARTMENT OF TRANSPORTATION.
4. LAND TITLE SURVEY & SUBDIVISION PLAN IN PORTLAND, MAINE, U.S.A. MADE FOR THE TRUST FOR PUBLIC LAND, THE CITY OF PORTLAND, THE MAINE DEPARTMENT OF TRANSPORTATION, THE CANADIAN NATIONAL RAILWAY COMPANY, DATED: APRIL 22, 1993, REVISED: 6/28/93, SCALE: 1"=40', JOB NO. 92188P, BY OWEN HASKELL, INC., RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 193, PAGE 193.
5. CITY OF PORTLAND, PRELIMINARY PLAN FOR THE IMPROVEMENT OF BACK COVE, PORTLAND, ME, DATED: 14TH MARCH, 1896, RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 8, PAGE 69.
6. ALTA/NSPS LAND TITLE SURVEY, RECORD OWNER: HERITAGE ACQUISITION CORP., 1 BEAN POT CIRCLE, CITY OF PORTLAND, COUNTY OF CUMBERLAND, STATE OF MAINE, SCALE: 1"=60', DATE: JUNE 30, 2021, REVISED: 2/28/2022, BY VHB, RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN POLAN BOOK 222, PAGES 102, 103, AND 104.

Legend

- DRAIN MANHOLE
- CATCH BASIN
- SEWER MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- MANHOLE
- HH□ HAND HOLE
- WATER GATE
- FIRE HYDRANT
- GAS GATE
- BOLLARD w/LIGHT
- STREET SIGN
- LIGHT POLE
- UTILITY POLE
- GUY POLE
- GUY WIRE
- F.F.E.=45.27' FINISHED FLOOR ELEVATION
- BIT. BITUMINOUS
- LSA LANDSCAPED AREA
- FOP EDGE OF PAVEMENT
- CURB
- GRAVEL
- STREETLINE
- HIGHWAY LINE
- PROPERTY LINE
- GUARD RAIL
- CHAIN LINK FENCE
- TREELINE
- OHW OVERHEAD WIRE
- SEWER EASEMENT
- WATER EASEMENT
- FLOOD ZONE
- FLOOD CONTOUR

vhb.com
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500 Southborough Drive
Suite 105B
South Portland, ME 04106
207.889.3150

Record Owner: The Initiative for Digital Engineering and Life Science
1 Bean Pot Circle, City of Portland
County of Cumberland, State of Maine

No.	Revision	Date	Appvd.

Designed by | Checked by

Issued for: **Permitting** — Date: **Sept. 15, 2023**

Not Issued For Construction

Drawing Title: **Existing Conditions Survey**

Drawing Number: **Sv-1**

Sheet 1 of 3

Project Number: **58570.00**

Record Owner
THE INITIATIVE FOR DIGITAL ENGINEERING AND LIFE SCIENCE
100 COMMERCIAL STREET
PORTLAND, MAINE
PARCEL ID: 447 A001001
BOOK 39828 PAGE 151

PRINTED SEAL
STATE OF MAINE
JEFFREY SHERMAN GREINER
2539
PROFESSIONAL LAND SURVEYOR

TO MY KNOWLEDGE AND BELIEF, THE INFORMATION ON THIS PLAN IS SUBSTANTIALLY CORRECT AS NOTED HEREON. THIS PLAN IS NOT VALID WITHOUT A SIGNATURE AND SEAL OF A MAINE LICENSED PROFESSIONAL LAND SURVEYOR.

BY Jeffrey Sherman Greiner 9/15/2023
JEFFREY SHERMAN GREINER, P.L.S. #2539 DATE

STATE OF MAINE
CUMBERLAND COUNTY Registry of Deeds
Received _____
at _____ H _____ M _____ M, and
recorded in Book _____ Page _____
ATTEST:
_____ Registrar

Saved: Friday, September 15, 2023 3:07:40 PM JGREINER Plotted: Friday, September 15, 2023 3:36:22 PM Jeffrey Greiner

N

MAINE WEST ZONE - 1802

GRID NORTH - NAD 83

General Notes

SEE SHEET 1 OF 3

Utility Notes

1) THE PURPOSE OF THIS PLAN IS TO COMPILE UTILITY LOCATIONS FROM VARIOUS SOURCES.
2) THE LOCATIONS OF EXISTING UTILITIES DEPICTED ON THIS PLAN ARE BASED ON FIELD OBSERVATIONS AND INFORMATION OF RECORD. THEY ARE NOT WARRANTED TO BE EXACTLY LOCATED NOR IS IT WARRANTED THAT ALL UTILITIES OR OTHER STRUCTURES ARE SHOWN ON THIS PLAN. DEPICTED INFORMATION NOT DIRECTLY OBSERVED IN THE FIELD WAS COMPILED FROM PLAN REFERENCE #1, OTHER INFORMATION PROVIDED BY THE CITY OF PORTLAND, AND FIELD LOCATIONS COLLECTED BY CONSIGLI.
3) THE NORTH ORIENTATION DEPICTED ON THIS PLAN IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD 83), MAINE WEST ZONE 1802; UNIT OF MEASURE: US SURVEY FOOT.
4) THE ELEVATION DATA DEPICTED HEREON IS REFERENCED TO THE CITY OF PORTLAND VERTICAL DATUM. CONTOUR INTERVAL: 1'.

CASCO BAY

RAILROAD

SHERWOOD STREET (PUBLIC)

INTERSTATE 295 NORTH

INTERSTATE 295 SOUTH

RECORD SEWER LOCATION

TOP OF FRAME = 27.86'
INV A = 12.1' (18" *)
INV B = 16.8' (8" PVC)
INV C = 12.6' (12" *)
INV D = 12.1' (18" *)
(* PIPE MATERIAL NOT VISIBLE)

CMP #1
CMP #2
CMP #3
CMP #4
CMP #5.1
CMP #10
CMP #11
CMP #12
CMP #13
CMP #14

APPROXIMATE RECORD WATERLINE LOCATION

WATERLINE LOCATION BY CONSIGLI

12" WATER LINE

APPROXIMATE SEE GENERAL NOTE #3

TOP OF FRAME = 14.95'
TOP OF PIPE = 11.3' (6" CAST?)
TOP OF SILT = 10.9'±
OTHER FEATURES NOT VISIBLE

TOP OF FRAME = 17.82'
COVER NOT REMOVEABLE AT TIME OF SURVEY

TOP OF FRAME = 15.02'
INV = 11.4' (18" CMP)
TOP OF SILT = 10.4'±

TOP OF FRAME = 15.47'
FU = 7.0' (10" CLAY)

TOP OF FRAME = 14.65'

TOP OF FRAME = 11.33'
INV A = 6.19' (12" RCP)
INV B = 5.77' (18" RCP)
INV C = 5.71' (12" RCP)
INV D = 6.05' (15" CMP)

TOP OF FRAME = 15.52'
INV A = 4.80' (18" RCP)
INV B = 10.99' (15" CMP)
INV C = 4.48' (24" CMP)
INV D = 6.08' (12" RCP)

RECORD DRAINAGE LOCATION

TOP OF FRAME = 17.60'
FULL OF WATER
FEATURES NOT VISIBLE

TOP OF FRAME = 15.00'
INACCESSIBLE AT TIME OF SURVEY

32" DIAMETER SMH
TOP OF FRAME = 11.15'
FU = 1.3' (12" PVC)

32" DIAMETER SMH
TOP OF FRAME = 11.26'
FU = -0.4' (12" PVC)

CMP #5

TOP OF FRAME = 11.13'
INV A = -0.9' (30" CMP)
INV B = -1.0' (30" CMP)

GAS GATE

30" CMP
28" CMP
INV = 3.6'
18" CMP

18" CMP
INV = 4.3'

18" CMP
INV = 4.0'

18" CMP
INV = 4.1'

TOP OF FRAME = 14.75'
INV A = 4.1' (*)
TOP OF WATER = -6.2'
(* PIPE SIZE & TYPE NOT OBSERVABLE)

FRAME DISLODGED FROM VAULT
TOP OF FRAME & INVERTS NOT MEASUREABLE

CONNECTION COULD NOT BE DETERMINED AT THE TIME OF SURVEY

RECORD SEWER LOCATION

TOP OF FRAME = 7.97'

TOP OF FRAME = 23.93'
INV A = 14.32" (18" RCP)
INV B = 14.47' (15" RCP)
INV C = 14.33" (18" RCP)

ASSUMED CONNECTION

TOP OF FRAME = 10.34'
INACCESSIBLE AT TIME OF SURVEY

TOP OF FRAME = 8.25'
INV A = 3.2' (8" PVC)
INV B = 3.4' (12" PVC)
INV C = 3.0 (8" PVC)

TOP OF FRAME = 9.63'
INV A = 4.1' (10" PVC)
INV B = 4.1' (10" PVC)
INV C = 3.8' (12" PVC)

TOP OF FRAME = 9.55'
INV A = 6.4' (6" PVC)
INV B = 6.4' (6" PVC)
SUMP = 3.4'

TOP OF FRAME = 9.3'
INV A = 4.4' (12" PVC)
INV B = 4.8' (6" PVC)
INV C = 4.7' (8" PVC)
INV D = 4.8' (6" PVC)

TOP OF FRAME = 9.30'
FU = 5.7' (6" PVC)

10" PVC
INV = 4.8'

GAS LINE MARKED IN FIELD

COOLING WATER OUTFALL

TOP OF FRAME = 9.12'
INV = 5.7' (12" PVC)

TOP OF FRAME = 8.84'
INV A = 3.3' (12" PVC)
INV B = 5.0' (12" PVC)
INV C = 2.8 (12" PVC)

12" PVC

TOP OF FRAME = 8.41'
FU = 3.8' (12"PVC)

ASSUMED CONNECTION

12" PVC
INV = 1.5'

TOP OF FRAME = 8.71'
FU = 3.2' (12" PVC)

10" PVC
INV = 0.8'
CONNECTION COULD NOT BE DETERMINED AT THE TIME OF SURVEY

TOP OF FRAME = 11.21'
FU = 2.9' (12" PVC)

18" PVC

18" CONC
INV = 19.5'

18" CONC
INV = 7.9'

ASSUMED CONNECTION

60 0 60 120
SCALE IN FEET

Legend

- DRAIN MANHOLE
- CATCH BASIN
- SEWER MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- MANHOLE
- HH HAND HOLE
- WATER GATE
- FIRE HYDRANT
- GAS GATE
- BOLLARD w/LIGHT
- STREET SIGN
- LIGHT POLE
- UTILITY POLE
- GUY POLE
- GUY WIRE
- OHW OVERHEAD WIRES
- SANITARY LINE
- W RECORD WATER LINE
- DRAINAGE
- G GAS LINE
- UNDERGROUND ELECTRIC
- W CONSIGLI WATER LINE
- E CONSIGLI ELECTRIC LINE
- S CONSIGLI SANITARY LINE

PRINTED SEAL

STATE OF MAINE
JEFFREY SHERMAN GREINER
2539
PROFESSIONAL LAND SURVEYOR

Jeffrey Sherman Greiner

9/15/2023

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vhb
500 Southborough Drive
Suite 105B
South Portland, ME 04106
207.889.3150

Record Owner: The Initiative for Digital Engineering and Life Science

1 Bean Pot Circle, City of Portland
County of Cumberland, State of Maine

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Sept. 15, 2023

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Drawing Title
Existing Conditions Survey Utilities

Drawing Number
Sv-2

Sheet 2 of 3

Project Number
58570.00

Record Owner

THE INITIATIVE FOR DIGITAL ENGINEERING AND LIFE SCIENCE
100 COMMERCIAL STREET
PORTLAND, MAINE
PARCEL ID: 447 A001001
BOOK 39828 PAGE 151

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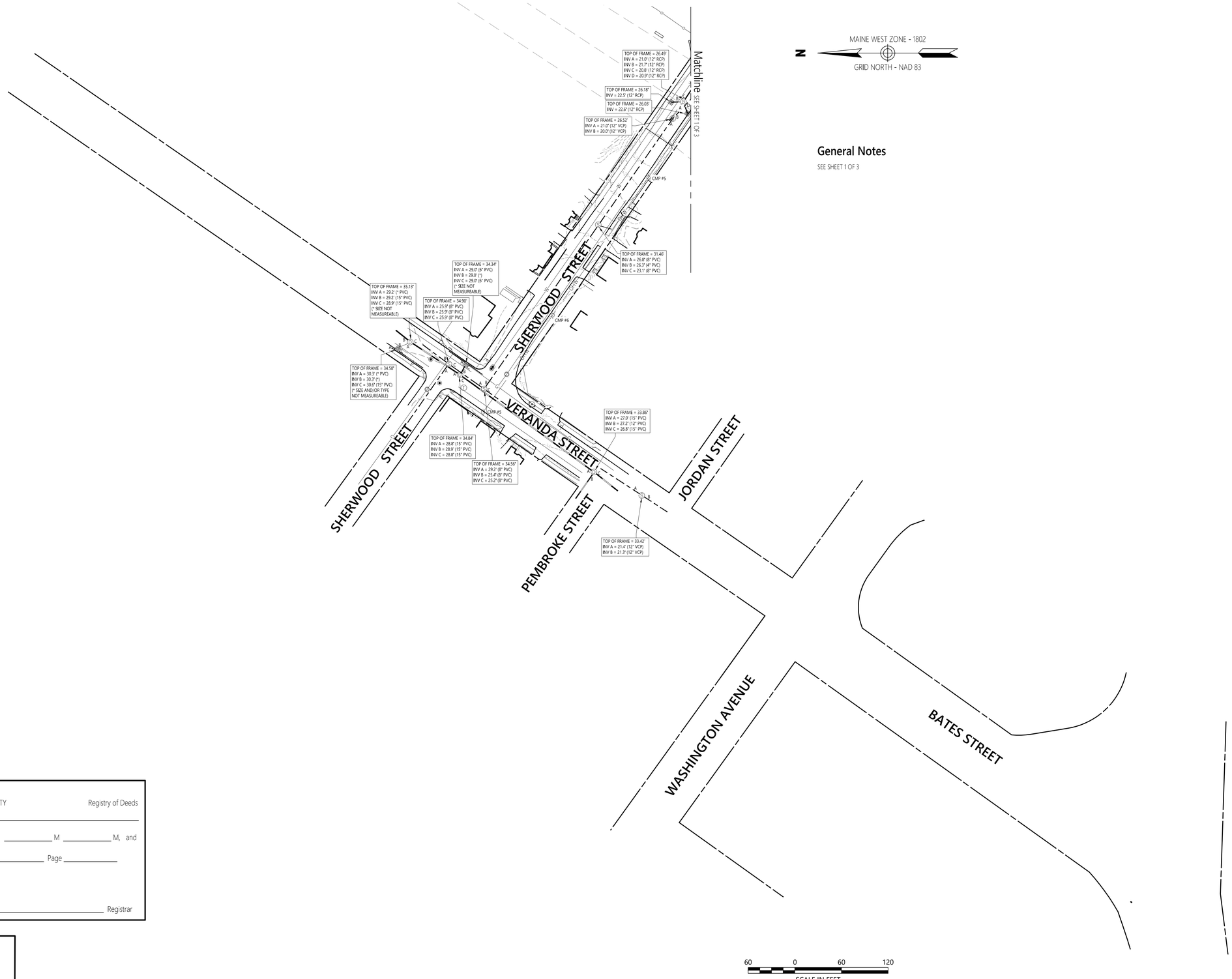

General Notes

SEE SHEET 1 OF 3

Legend

- DRAIN MANHOLE
- CATCH BASIN
- SEWER MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- MANHOLE
- HAND HOLE
- WATER GATE
- FIRE HYDRANT
- GAS GATE
- BOLLARD w/LIGHT
- STREET SIGN
- LIGHT POLE
- UTILITY POLE
- GUY POLE
- GUY WIRE
- CURB
- GRAVEL
- STREETLINE
- HIGHWAY LINE
- PROPERTY LINE
- GUARD RAIL
- CHAIN LINK FENCE
- TREELINE
- OHW — OVERHEAD WIRE
- SEWER EASEMENT
- WATER EASEMENT
- SANITARY LINE
- W — WATER LINE
- DRAINAGE
- G — GAS LINE
- UNDERGROUND ELECTRIC

STATE OF MAINE
CUMBERLAND COUNTY Registry of Deeds
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at _____ H _____ M _____ M, and
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STATE OF MAINE · JEFFREY SHERMAN GREINER · 10509 · PROFESSIONAL LAND SURVEYOR

Jeffrey Sherman Greiner
9/15/2023

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vhb
500 Southborough Drive
Suite 105B
South Portland, ME 04106
207.889.3150

Record Owner: The Initiative for Digital Engineering and Life Science

1 Bean Pot Circle, City of Portland
County of Cumberland, State of Maine

No.	Revision	Date	Appvd.

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Issued for: Permitting
Date: Sept. 15, 2023

Not Issued For Construction

Drawing Title
Existing Conditions Survey Off-Site Utilities

Drawing Number
Sv-3

Sheet 3 of 3

Project Number
58570.00

Record Owner
THE INITIATIVE FOR DIGITAL ENGINEERING AND LIFE SCIENCE
100 COMMERCIAL STREET
PORTLAND, MAINE
PARCEL ID: 447 A001001
BOOK 39828 PAGE 151

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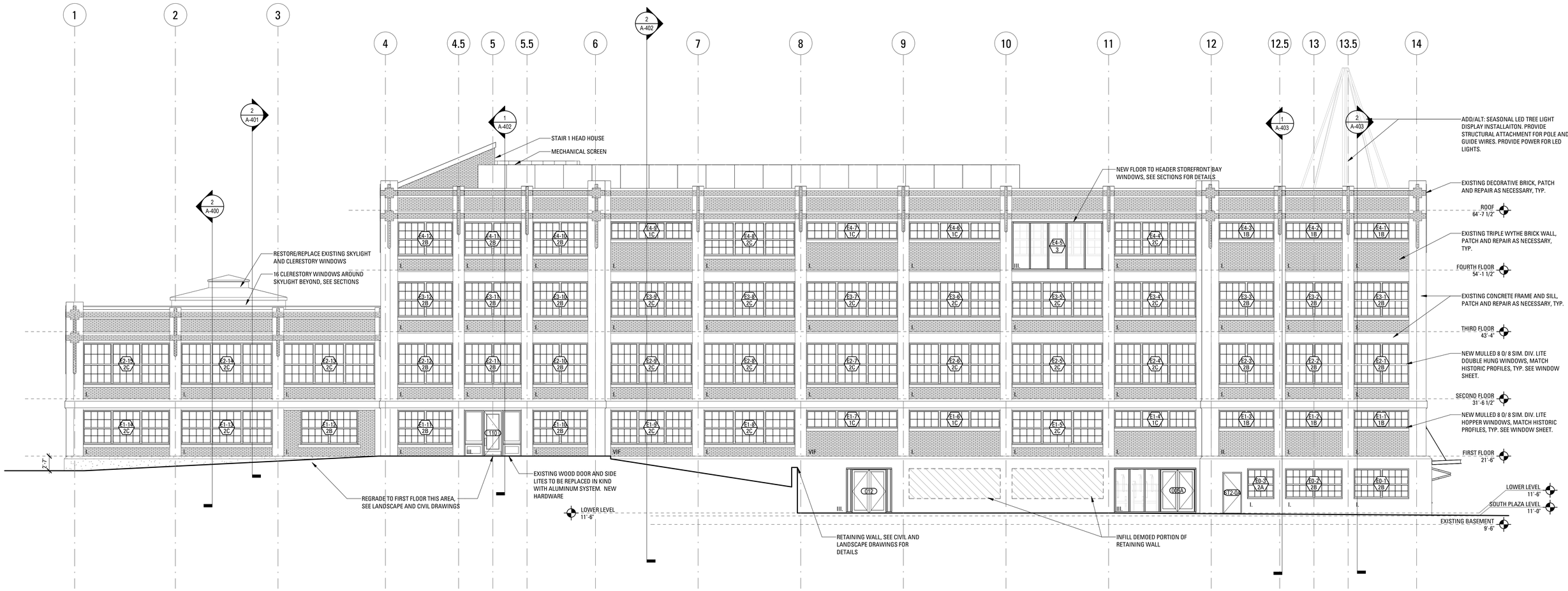
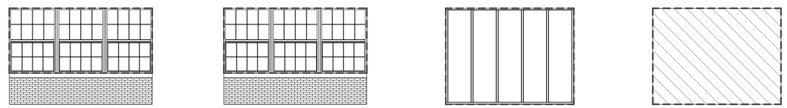


1 WEST ELEVATION
1/8" = 1'-0"

INFILL TYPOLOGIES LEGEND



TYPE I.
NEW MULTI-PANE WINDOW IN EXISTING OPENING, MINOR REPAIRS TO INFILL

TYPE II.
NEW HISTORIC STYLE WINDOW, NEW CONCRETE SILL, NEW MASONRY INFILL

TYPE III.
NEW STOREFRONT WINDOWS FILLING OPENING

TYPE IV.
CONCRETE INFILL AT DEMOED PORTIONS OF FOUNDATION WALL

PROJECT NORTH
TRUE NORTH



Roux Institute Bean Building
Project # 22.031

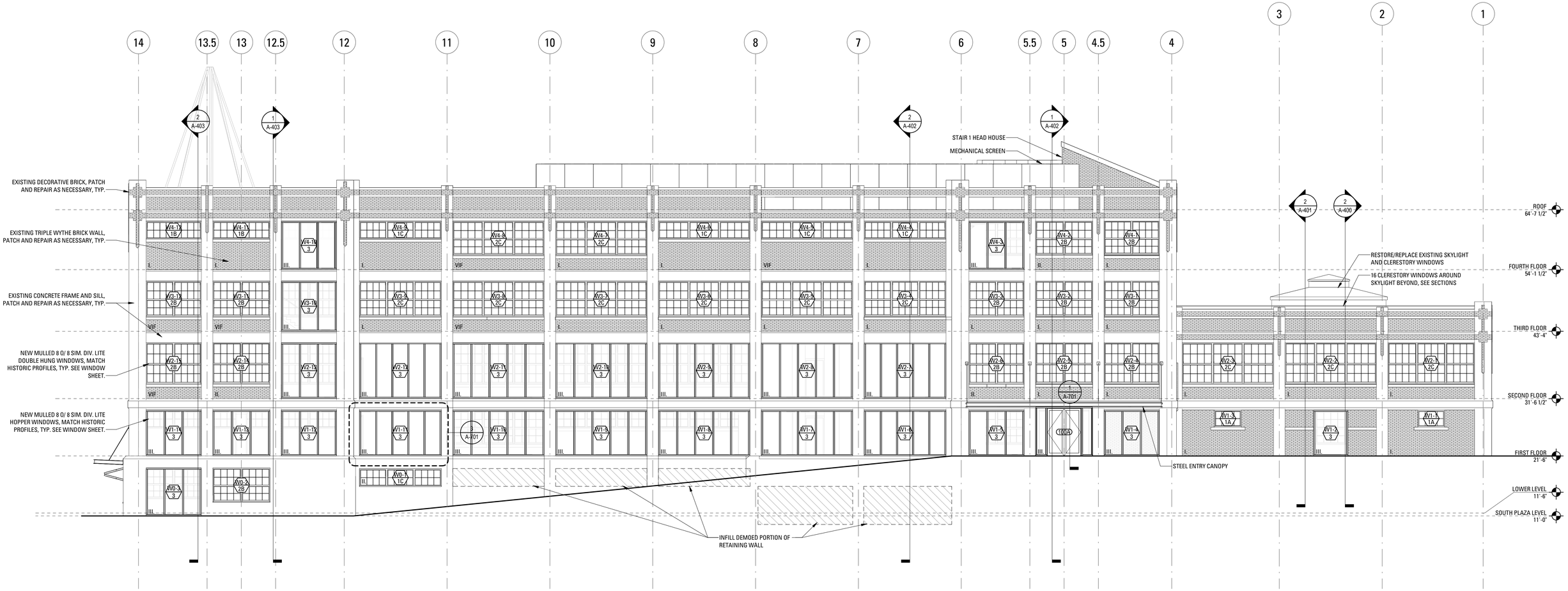
Northeastern University - IDEALS
Portland, ME 04103

OCTOBER 27, 2023 **LAND-USE PERMIT SET**

Rev.	Date	Revision Title

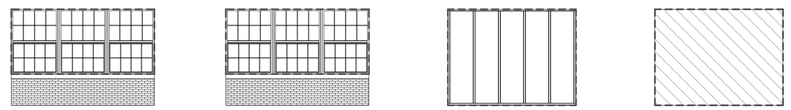
WEST ELEVATION

A-301



1 EAST ELEVATION
1/8" = 1'-0"

INFILL TYPOLOGIES LEGEND



TYPE I.
NEW MULTI-PANE WINDOW IN EXISTING OPENING, MINOR REPAIRS TO INFILL

TYPE II.
NEW HISTORIC STYLE WINDOW, NEW CONCRETE SILL, NEW MASONRY INFILL

TYPE III.
NEW STOREFRONT WINDOWS FILLING OPENING

TYPE IV.
CONCRETE INFILL AT DEMOED PORTIONS OF FOUNDATION WALL

PROJECT NORTH
TRUE NORTH

REGISTERED ARCHITECT
Jason Vallancey
ARC4420
STATE OF MAINE

Roux Institute Bean Building
Project # 22.031

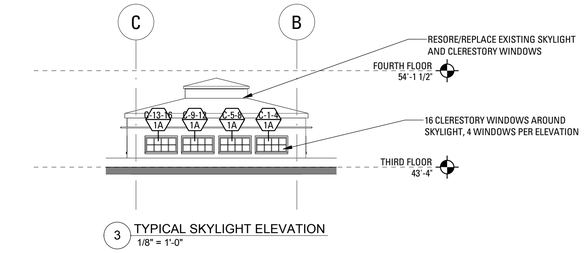
Northeastern University - IDEALS
Portland, ME 04103

OCTOBER 27, 2023 **LAND-USE PERMIT SET**

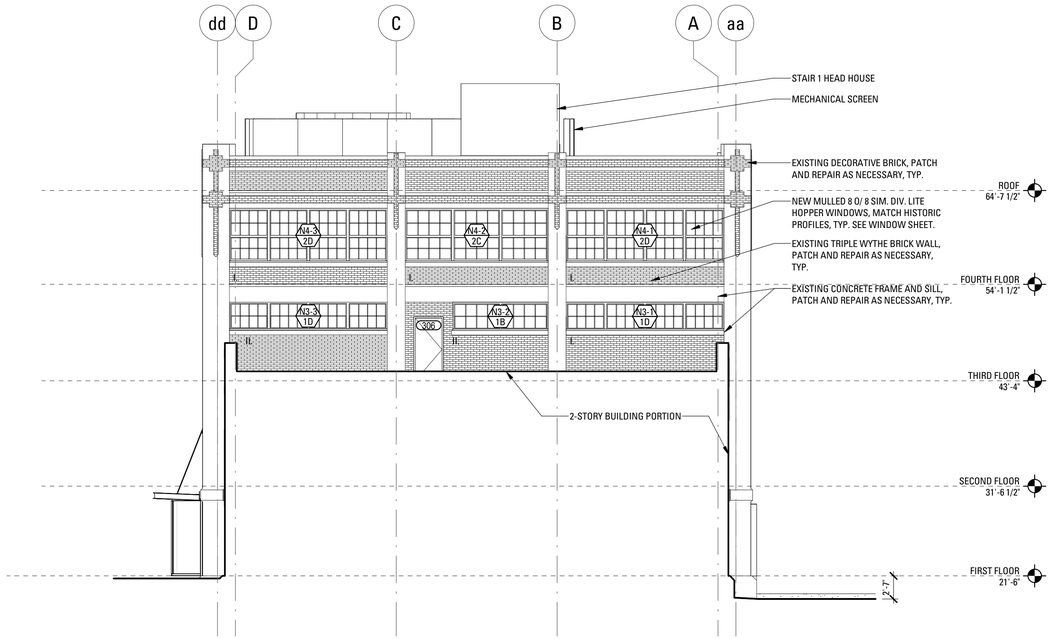
Rev.	Date	Revision Title

EAST ELEVATION

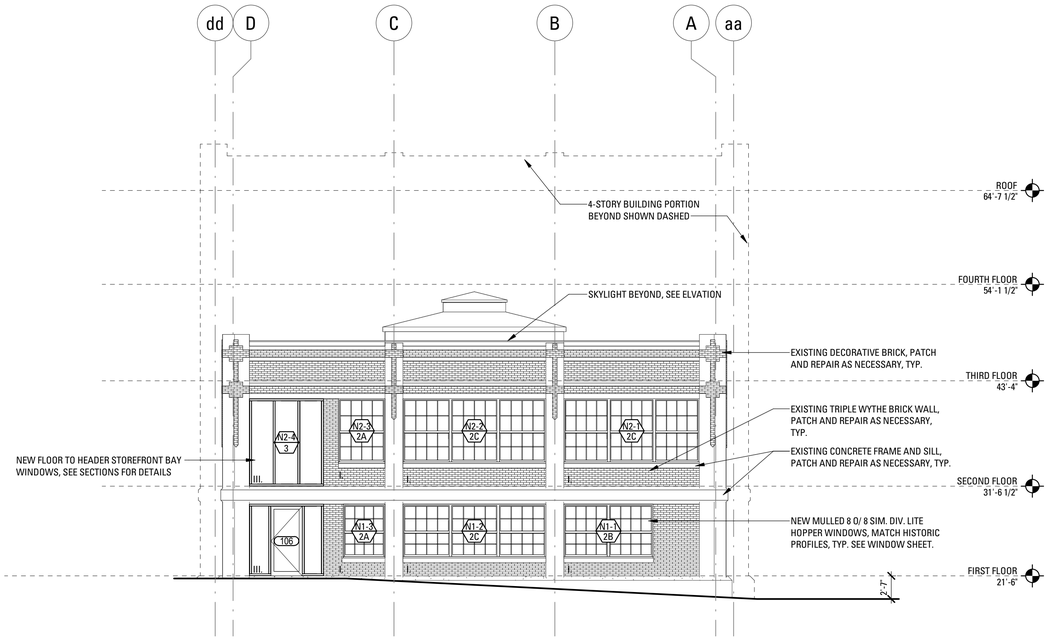
A-302



3 TYPICAL SKYLIGHT ELEVATION
1/8" = 1'-0"

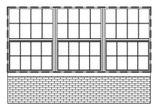


2 NORTH ELEVATION - UPPER FLOORS
1/8" = 1'-0"

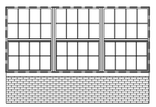


1 NORTH ELEVATION - LOWER FLOORS
1/8" = 1'-0"

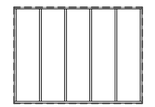
INFILL TYPOLOGIES LEGEND



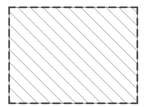
TYPE I.
NEW MULTI-PANE WINDOW IN EXISTING OPENING, MINOR REPAIRS TO INFILL



TYPE II.
NEW HISTORIC STYLE WINDOW, NEW CONCRETE SILL, NEW MASONRY INFILL



TYPE III.
NEW STOREFRONT WINDOWS FILLING OPENING



TYPE IV.
CONCRETE INFILL AT DEMOED PORTIONS OF FOUNDATION WALL

PROJECT NORTH
TRUE NORTH



Roux Institute Bean Building
Project # 22.031

Northeastern University - IDEALS
Portland, ME 04103

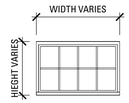
OCTOBER 27, 2023 **LAND-USE PERMIT SET**

Rev.	Date	Revision Title

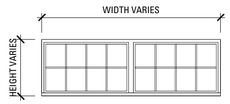
NORTH ELEVATION

A-303

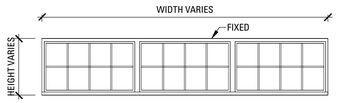
WINDOW TYPES



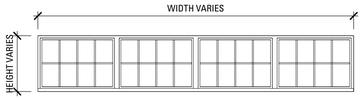
TYPE 1A - ONE WINDOW



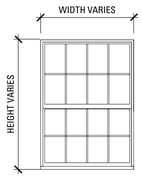
TYPE 1B - TWO WINDOWS



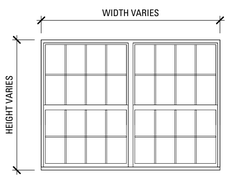
TYPE 1C - THREE WINDOWS



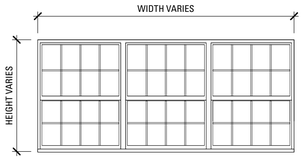
TYPE 1D - FOUR WINDOWS



TYPE 2A - ONE WINDOW



TYPE 2B - TWO WINDOWS



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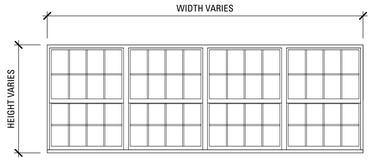
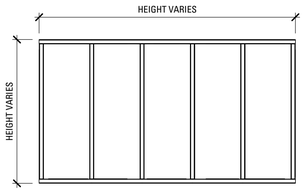
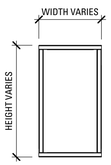


TYPE 2D - FOUR WINDOWS



TYPE 3 - INSET STOREFRONT WINDOW

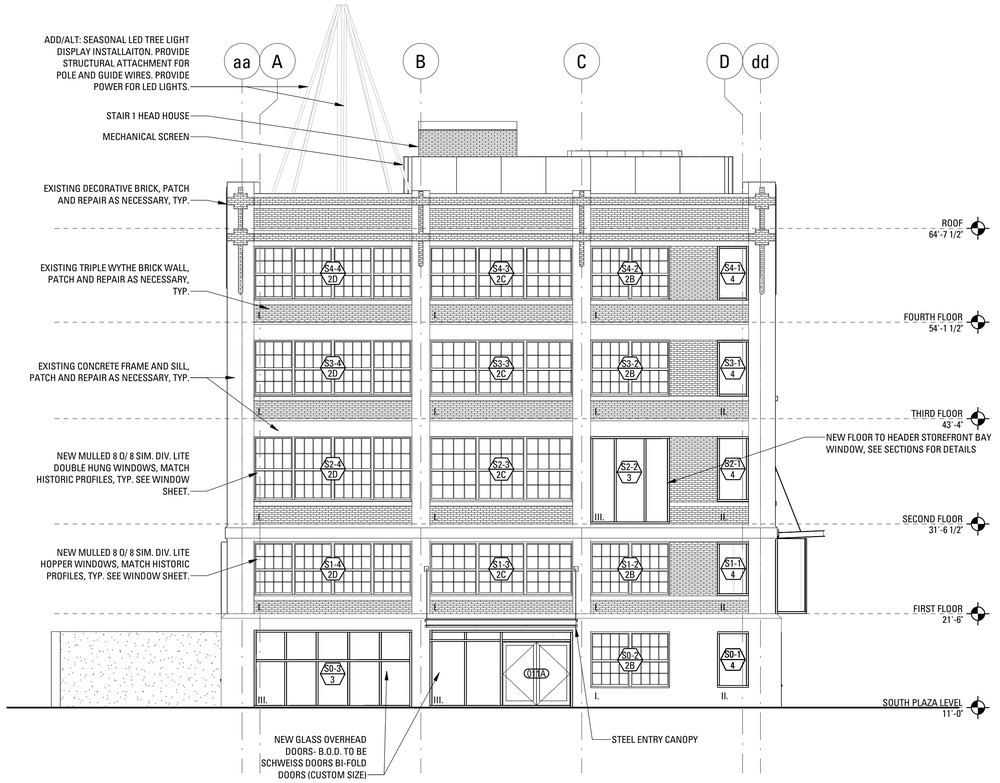


TYPE 4 - ONE WINDOW

NOTE:
-TYPE 1 & 2 WINDOW BASIS OF DESIGN IS TRIPLE-GLAZED WAUSAU INVENT RETRO - XLT WITH SIMULATED DIVIDED LITES, FIXED-SIMULATED SASH
-TYPE 3 & 4 STOREFRONT BASIS OF DESIGN IS TRIPLE-GLAZED KAWNEER TRIFAB 451T.

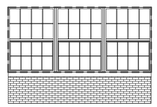
WINDOW SCHEDULE

MARK	TYPE	JAMB	HEAD	SILL	COMMENTS
1A	Single Sash (1-Unit)				WINDOWS WITHIN EXISTING OPENINGS, DIMENSIONS TO BE VERIFIED IN FIELD
1B	Single Sash (2-Unit)				WINDOWS WITHIN EXISTING OPENINGS, DIMENSIONS TO BE VERIFIED IN FIELD
1C	Single Sash (3-Unit)				WINDOWS WITHIN EXISTING OPENINGS, DIMENSIONS TO BE VERIFIED IN FIELD
1D	Single Sash (4-Unit)				WINDOWS WITHIN EXISTING OPENINGS, DIMENSIONS TO BE VERIFIED IN FIELD
2A	Simulated Double Sash (1-Unit)				WINDOWS WITHIN EXISTING OPENINGS, DIMENSIONS TO BE VERIFIED IN FIELD
2B	Simulated Double Sash (2-Unit)				WINDOWS WITHIN EXISTING OPENINGS, DIMENSIONS TO BE VERIFIED IN FIELD
2C	Simulated Double Sash (3-Unit)				WINDOWS WITHIN EXISTING OPENINGS, DIMENSIONS TO BE VERIFIED IN FIELD
2D	Simulated Double Sash (4-Unit)				WINDOWS WITHIN EXISTING OPENINGS, DIMENSIONS TO BE VERIFIED IN FIELD

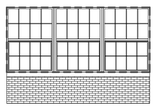


1 SOUTH ELEVATION
1/8" = 1'-0"

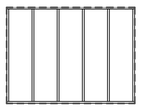
INFILL TYPOLOGIES LEGEND



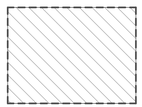
TYPE I.
NEW MULTI-PANE WINDOW IN EXISTING OPENING, MINOR REPAIRS TO INFILL



TYPE II.
NEW HISTORIC STYLE WINDOW, NEW CONCRETE SILL, NEW MASONRY INFILL



TYPE III.
NEW STOREFRONT WINDOWS FILLING OPENING



TYPE IV.
CONCRETE INFILL AT DEMOED PORTIONS OF FOUNDATION WALL

PROJECT NORTH
TRUE NORTH



Roux Institute Bean Building
Project # 22.031

Northeastern University - IDEALS
Portland, ME 04103

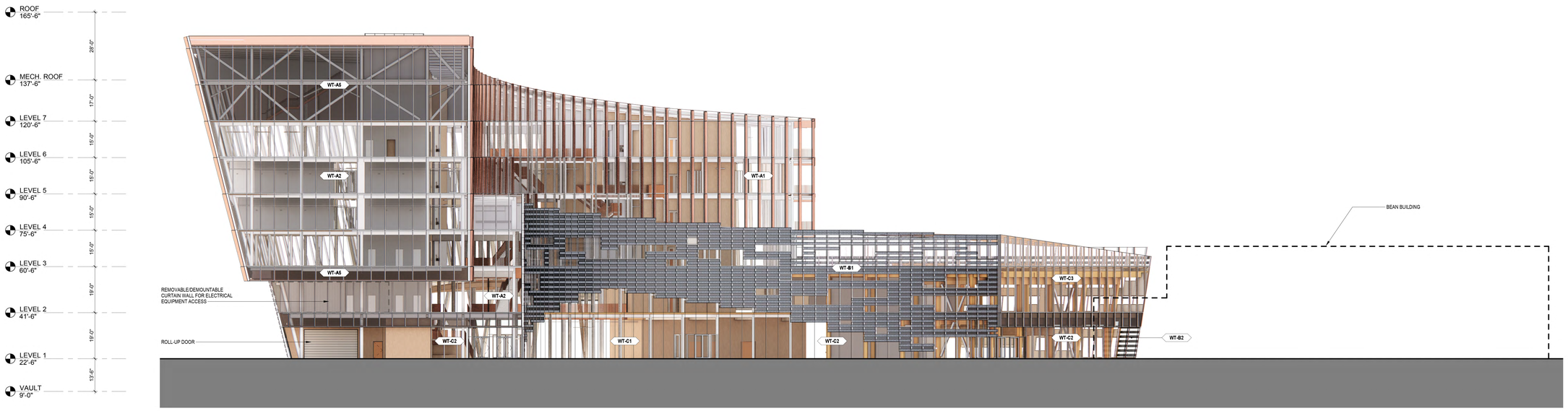
OCTOBER 27, 2023 **LAND-USE PERMIT SET**

Rev.	Date	Revision Title

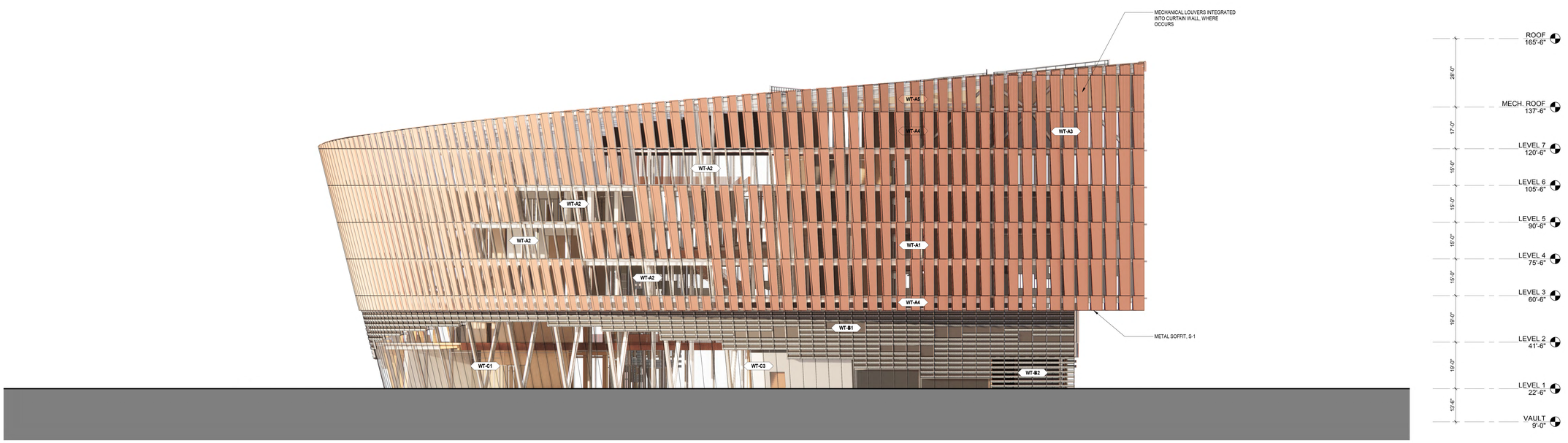
SOUTH ELEVATION AND WINDOW TYPES

A-304

System	**Plan color code**														
	Name	**Unitized System**						**Unitized System**		**Cassette Toggle System**			**Vertical Rainscreen System**	**Soffit**	
	Type number	**WT-A**						**WT-B**		**WT-C**			**WT-D**	**S-1**	
	Sub type	WT-A1	WT-A2	WT-A3	WT-A4	WT-A5	WT-A6	WT-B1	WT-B2	WT-C1	WT-C2	WT-C3			
	General description	The unitized curtain wall system consists of thermally broken aluminum framing with a double chicken head extrusion, pressure equalized to the rear seal. The vision panels are TGU, structurally glazed to the thermally broken aluminum framing. This system includes varying depth/profile of exterior extruded aluminum vertical fins supported by thermally broken knife plates at the stack joint and custom formed 1/4" painted aluminum panels with mineral wool insulation and Glv. steel backpan. This unitized system includes insulated open shadowbox with 1/8" painted formed aluminum panel and galc. steel backpan at the edge of slab. Curtainwall system allows for steel stiffeners as required. The sloped glass is not tilted outward more than 15 degrees, provide mechanical restraint as an alternate only if deemed to be required.	The unitized curtain wall system consists of thermally broken aluminum framing with a double chicken head extrusion, pressure equalized to the rear seal. The vision panels are TGU, structurally glazed to the thermally broken aluminum framing. This unitized system includes insulated open shadowbox with 1/8" painted formed aluminum panel and galc. steel backpan at the edge of slab. Curtainwall system allows for steel stiffeners as required. The sloped glass is not tilted outward more than 15 degrees, provide mechanical restraint as an alternate only if deemed to be required.	Similar to WT-A1, but the glass is replaced by Louvers.	Similar to WT-A1, but the TGU is fully fritted/opacified, and the system includes backpan and mineral wool insulation. The sloped glass is not tilted outward more than 15 degrees, provide mechanical restraint as an alternate only if deemed to be required.	Similar to WT-A2, but the TGU is fully fritted/opacified, the system includes backpan and mineral wool insulation.	Similar to WT-A2, but the Glazing unit is a fully fritted/opacified Laminated glass. The system is a screen system, hence does not include open spandrel.	The unitized curtain wall system consists of thermally broken aluminum framing with a double chicken head extrusion, pressure equalized to the rear seal. TGU is structurally glazed to the thermally broken aluminum framing. The opaque surfaces consist of granite panels and custom formed painted aluminum panels with black fabric faced mineral wool insulation and galv. backpan. The granite panels are supported by stainless steel undercut anchors and aluminum substructure which is locally supported by thermally broken stainless steel angles fixed to the mullion. Curtainwall system allows for steel stiffeners as required. The sloped glass is not tilted outward more than 15 degrees, provide mechanical restraint as an alternate only if deemed to be required.	Similar to WT-B1, but bottom bearing @ ground level only, without custom formed painted aluminum panel, backpan, insulation or glass.	The cassette toggle system consists of triple glazing units structurally glazed to aluminum U channel, toggled onto a custom extruded glazing adapter which is fixed onto bottom-bearing, double-story glass fins. TGU panels have horizontal joint at the 19ft without a horizontal transom. Upper row of glass panels are stacked on top of the glass panels at grade with setting blocks between the panels. Glazing adapter contains a pressure equalized cavity which is vented and drained to the exterior, and vented to the head connection. The fin connection at the top has a vertical slotted hole to accommodate the building movements. The sloped glass is not tilted outward more than 15 degrees, provide mechanical restraint as an alternate only if deemed to be required.	Similar to WT-C1, the glass fins are replaced by Aluminum extrusion. The sloped glass is not tilted outward more than 15 degrees, provide mechanical restraint as an alternate only if deemed to be required.	Similar to WT-C2, the TGU is fully fritted/opacified. In addition, the system would include Mineral wool insulation and galv. Steel back pan. The sloped glass is not tilted outward more than 15 degrees, provide mechanical restraint as an alternate only if deemed to be required.	Metal panel rainscreen system with steel stud back up wall. Build-up from interior to exterior: -Structural framing -Exterior Sheathing -Continuous air/vapor barrier -Mineral wool insulation -Thermally broken substructure -Air cavity -1/8" Painted Aluminum Panels Joints to be designed as per architectural drawings. Fixings and substructure to include bi-metallic separator as required, to prevent galvanic corrosion.	Exterior soffit cladding panel with continuous air/vapor barrier and mineral wool insulation. The exterior cladding is to be mechanically fastened to the sub-structure which is supported by the backup structure. Build-up from interior to exterior: -Structural framing -Exterior Sheathing -Continuous air/vapor barrier -Mineral wool insulation -Thermally broken substructure -Air cavity -1/8" Painted aluminum soffit panels Joints to be designed as per architectural drawings. Fixings and substructure to include bi-metallic separator as required, to prevent galvanic corrosion.
	Primary specification section	084413 - Glazed Aluminum Curtain Walls						084413 - Glazed Aluminum Curtain Walls		084401 - Glass Fin Supported Glazing System	084414 - Glazed Stick-Built Systems		070001 - Rainscreen System	070001 - Rainscreen System	



1 NORTH ELEVATION - OVERALL
1/16" = 1'-0"



2 EAST ELEVATION - OVERALL
1/16" = 1'-0"

10/2/2023 4:52:50 PM

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

The Roux Institute

KeyPlan

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

DESIGN DEVELOPMENT

Number	Revision	Date

LICENSED ARCHITECT
TIMOTHY D. MANSFIELD
NO. 3838
STATE OF MAINE

Stamp 10/27/2023

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	WS
Checked	BC
Date	27 OCTOBER, 2023
Scale	1/16" = 1'-0"

Drawing Title
NORTH & EAST EXTERIOR ELEVATIONS

A20.01

	Plan color code														
	Name	Unitized System						Unitized System		Cassette Toggle System			Vertical Rainscreen System	Soffit	
	Type number	WT-A						WT-B		WT-C			WT-D	S-1	
System	Sub type	WT-A1	WT-A2	WT-A3	WT-A4	WT-A5	WT-A6	WT-B1	WT-B2	WT-C1	WT-C2	WT-C3			
	General description	The unitized curtain wall system consists of thermally broken aluminum framing with a double chicken head extrusion, pressure equalized to the rear seal. The vision panels are TGU, structurally glazed to the thermally broken aluminum framing. This system includes varying depth/profile of exterior extruded aluminum vertical fins supported by thermally broken knife plates at the stack joint and custom formed 1/4" painted aluminum panels with mineral wool insulation and Glv. steel backpan. This unitized system includes insulated open shadowbox with 1/8" painted formed aluminum panel and galc. steel backpan at the edge of slab. Curtainwall system allows for steel stiffeners as required. The sloped glass is not tilted outward more than 15 degrees, provide mechanical restraint as an alternate only if deemed to be required.	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Similar to WT-A2, but the TGU is fully fritted/opacified, the system includes backpan and mineral wool insulation.	Similar to WT-A2, but the Glazing unit is a fully fritted/opacified Laminated glass. The system is a screen system, hence does not include open spandrel.	The unitized curtain wall system consists of thermally broken aluminum framing with a double chicken head extrusion, pressure equalized to the rear seal. TGU is structurally glazed to the thermally broken aluminum framing. The opaque surfaces consist of granite panels and custom formed painted aluminum panels with black fabric faced mineral wool insulation and galv. backpan. The granite panels are supported by stainless steel undercut anchors and aluminum substructure which is locally supported by thermally broken stainless steel angles fixed to the mullion. Curtainwall system allows for steel stiffeners as required. 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The sloped glass is not tilted outward more than 15 degrees, provide mechanical restraint as an alternate only if deemed to be required.	Similar to WT-C1, the glass fins are replaced by Aluminum extrusion. The sloped glass is not tilted outward more than 15 degrees, provide mechanical restraint as an alternate only if deemed to be required.	Similar to WT-C2, the TGU is fully fritted/opacified. In addition, the system would include Mineral wool insulation and galv. Steel back pan. The sloped glass is not tilted outward more than 15 degrees, provide mechanical restraint as an alternate only if deemed to be required.	Metal panel rainscreen system with steel stud back up wall. Build-up from interior to exterior: -Structural framing -Exterior Sheathing -Continuous air/vapor barrier -Mineral wool insulation -Thermally broken substructure -Air cavity -1/8" Painted Aluminum Panels Joints to be designed as per architectural drawings. 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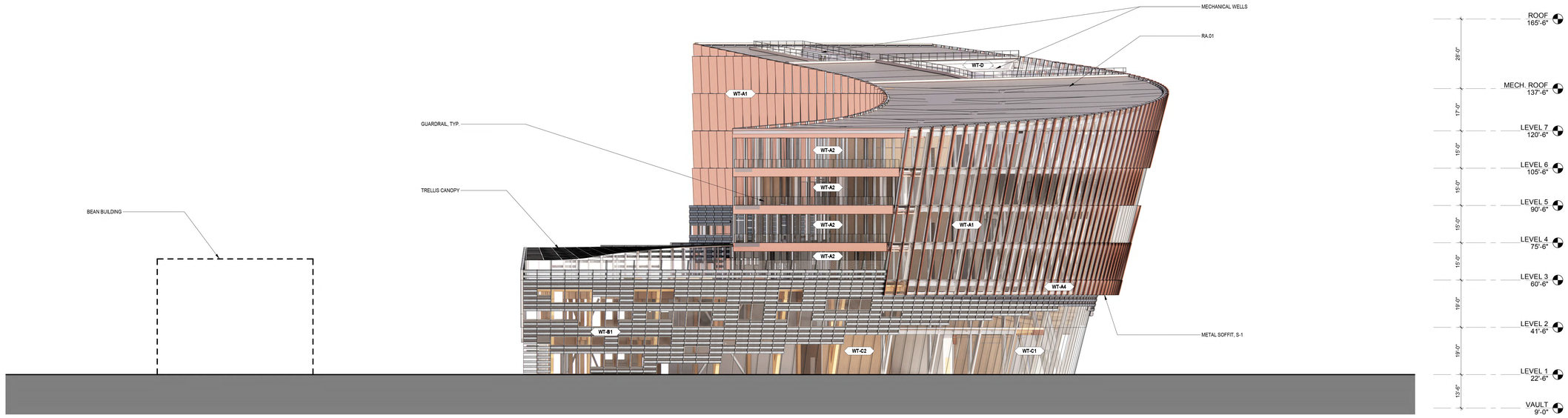
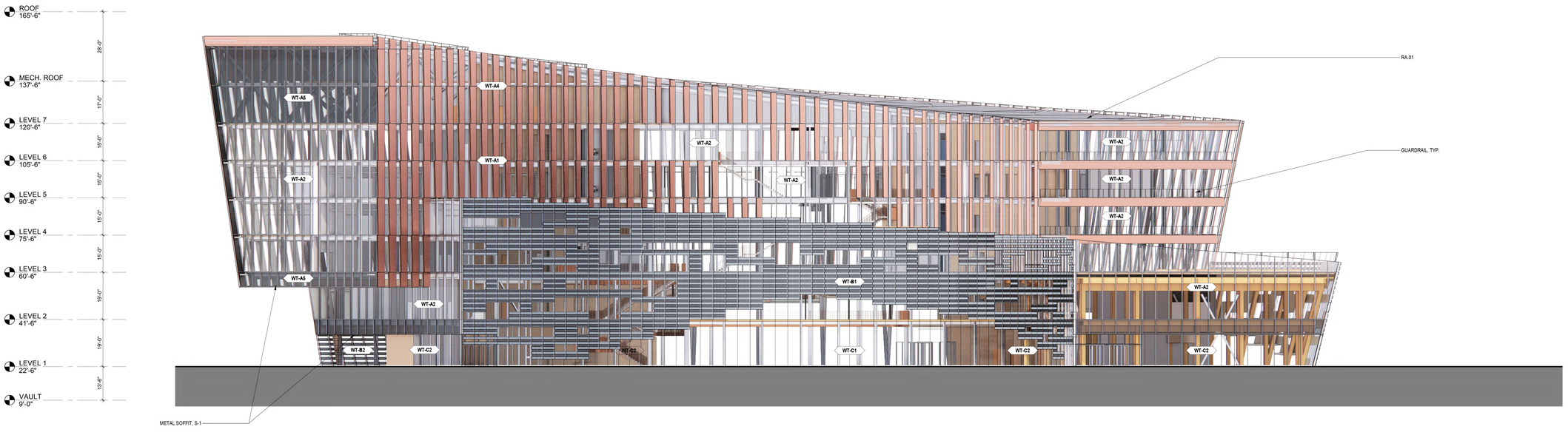
	Primary specification section	084413 - Glazed Aluminum Curtain Walls						084413 - Glazed Aluminum Curtain Walls		084401 - Glass Fin Supported Glazing System	084414 - Glazed Stick-Built Systems		070001 - Rainscreen System	070001 - Rainscreen System	



1 SOUTH ELEVATION - OVERALL
1/16" = 1'-0"



2 WEST ELEVATION - OVERALL
1/16" = 1'-0"

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
The Roux Institute

KeyPlan

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

DESIGN DEVELOPMENT

Number	Revision	Date

LICENSED ARCHITECT
TIMOTHY D. MANSFIELD
NO. 3838
STATE OF MAINE

Stamp 10/27/2023

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	WS
Checked	BC
Date	27 OCTOBER, 2023
Scale	1/16" = 1'-0"

Drawing Title
SOUTH & WEST EXTERIOR ELEVATIONS

A20.02

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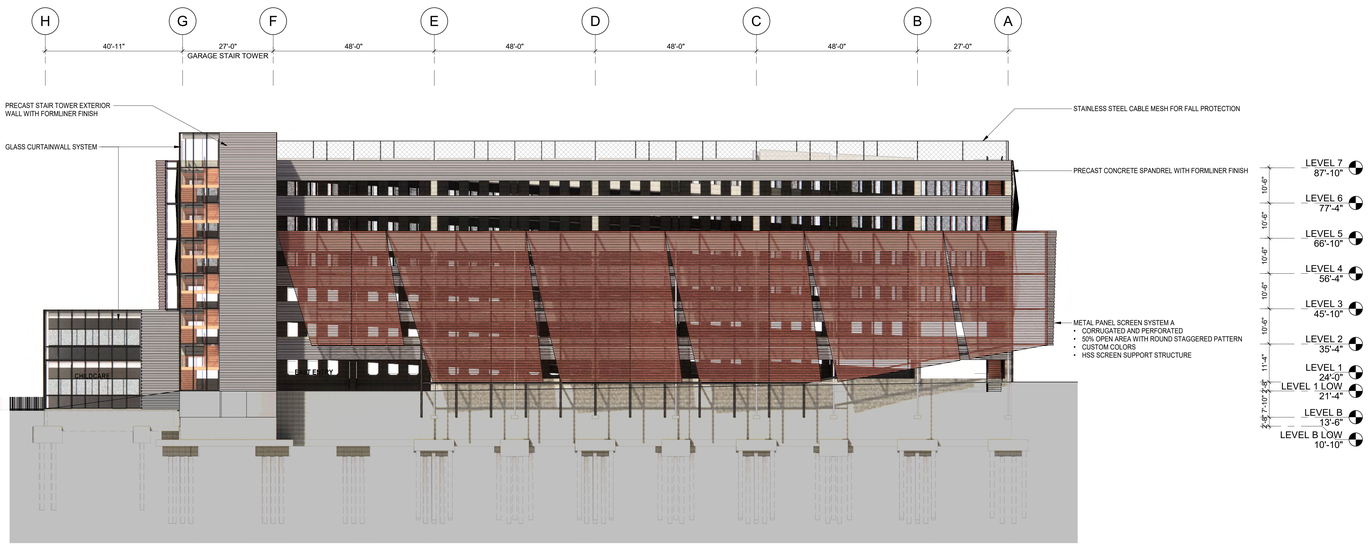
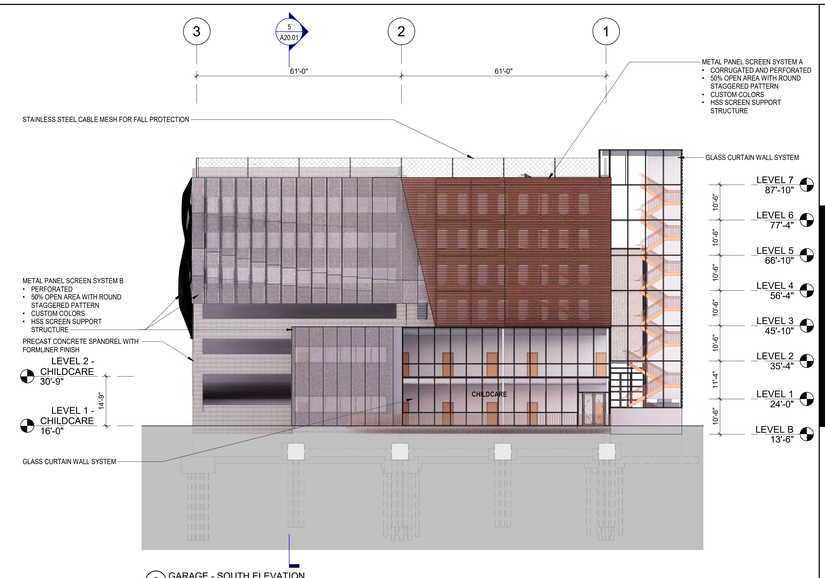
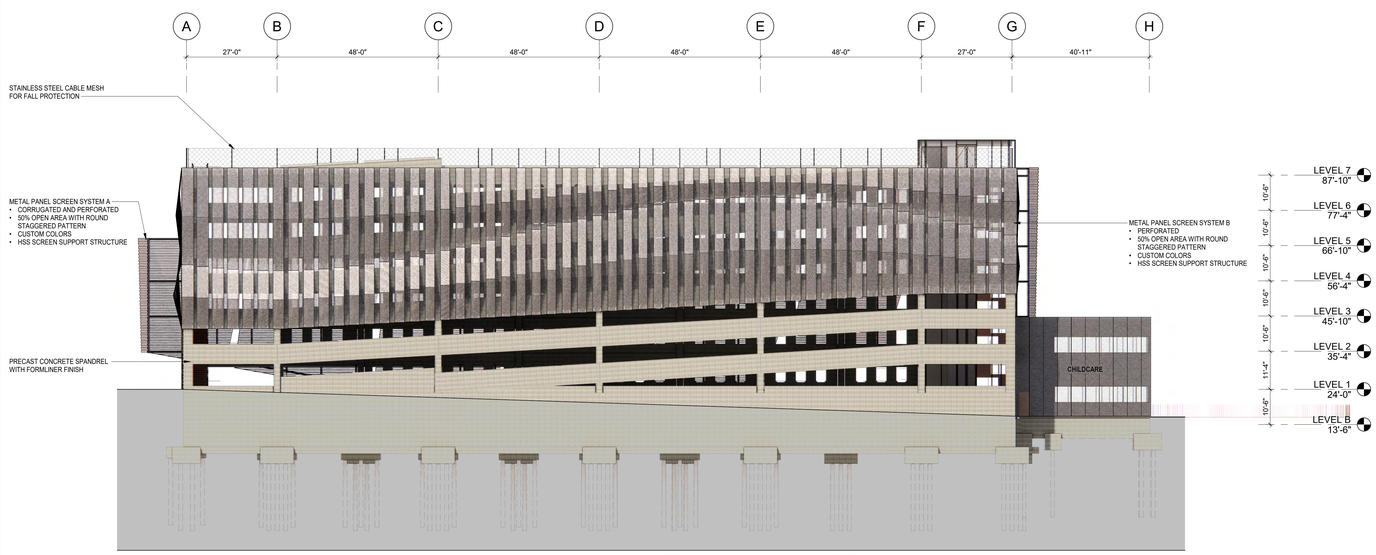


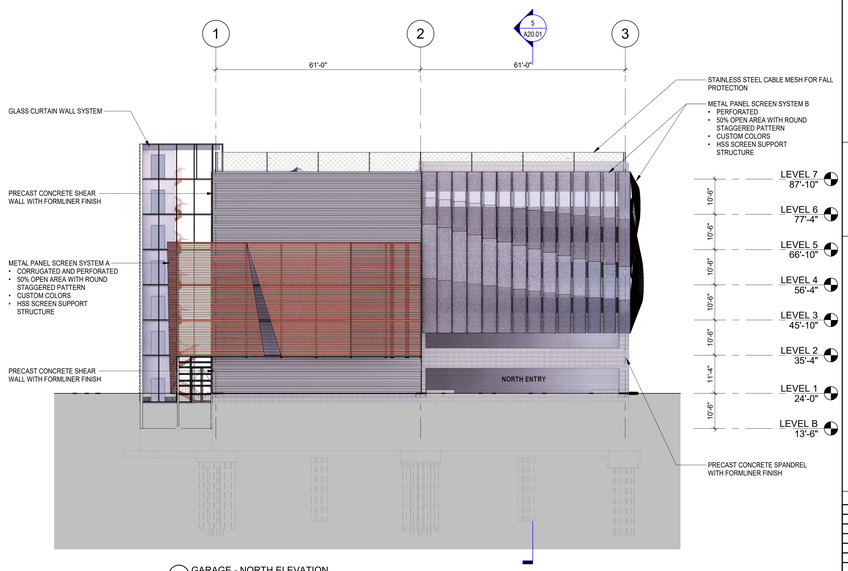
1 GARAGE - EAST ELEVATION
1/16" = 1'-0"



2 GARAGE - SOUTH ELEVATION
1/16" = 1'-0"



3 GARAGE - WEST ELEVATION
1/16" = 1'-0"



4 GARAGE - NORTH ELEVATION
1/16" = 1'-0"



5 GARAGE - SECTION
1/16" = 1'-0"

11/2/2023 11:54:41 AM

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LAND-USE PERMIT SET

Number	Revision	Date

Stamp

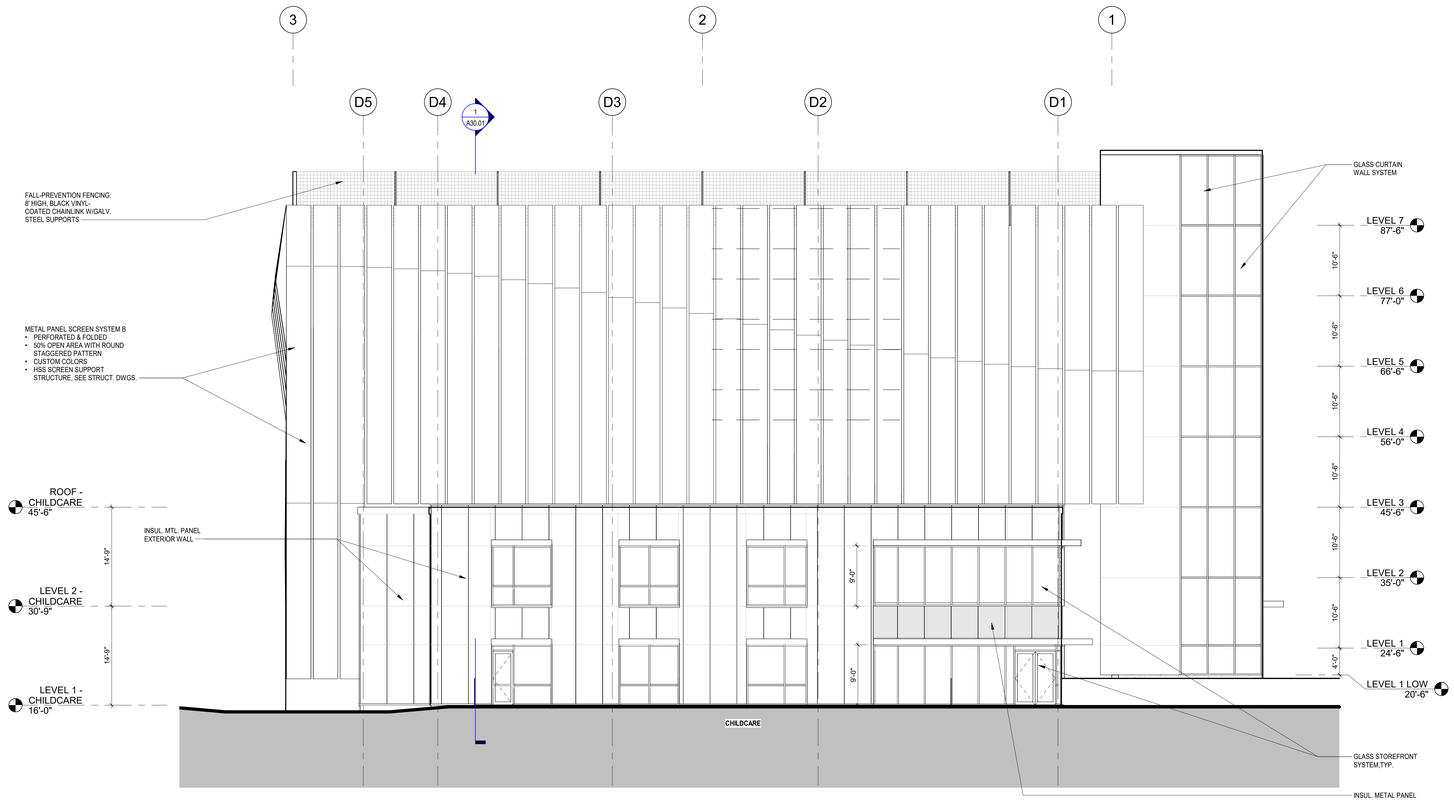
Job #	2202		
Project	THE ROUX INSTITUTE		
Drawn By	WS	Checked	BC
Date	27 OCTOBER 2023		
Scale			

Drawing Title
PARKING GARAGE EXT. ELEVATIONS AND SECTION

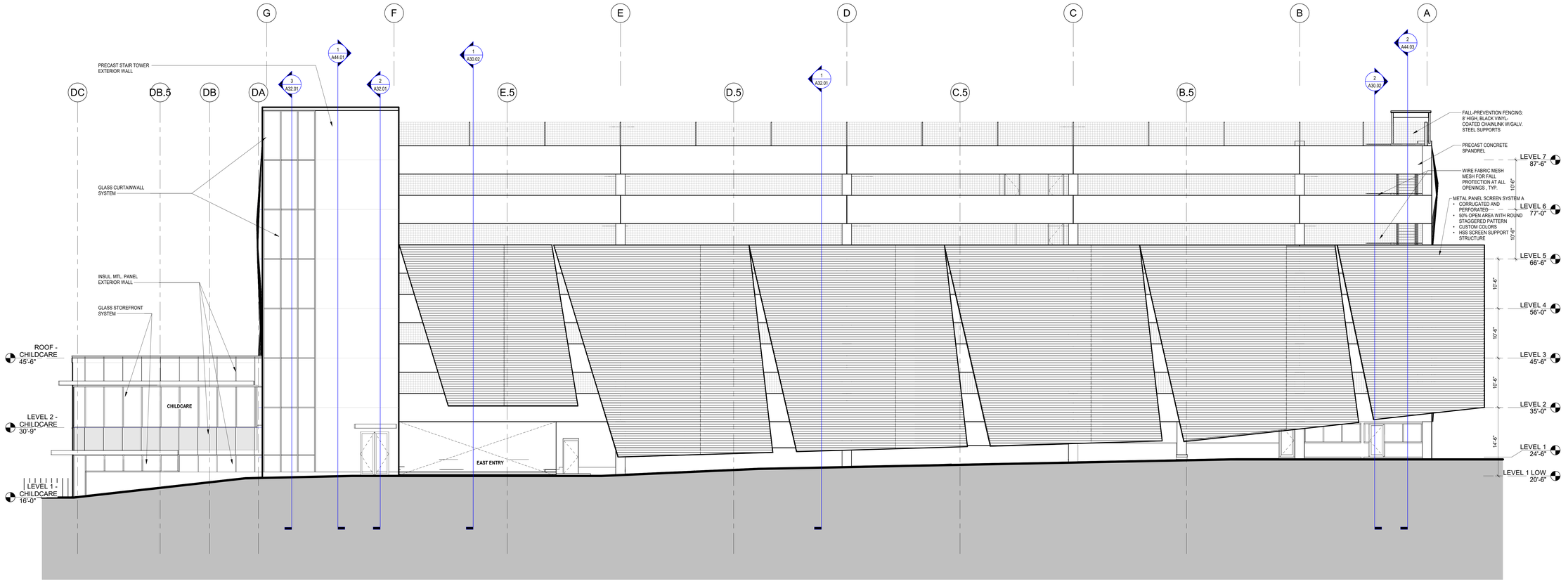
A20.01

GENERAL NOTES

1. ELECTRICAL - LIGHTING: INTERIOR BUILDING LIGHTING SHALL COMPLY WITH ANSI/ASHRAE/IES STANDARD 90.1-2022.
2. ELECTRICAL - POWER: RECEPTACLES WILL BE PROVIDED ADJACENT TO INTERIOR BIKE PARKING AS REQUIRED.



1 GARAGE - SOUTH ELEVATION
1/8" = 1'-0"



2 GARAGE - EAST ELEVATION
1/8" = 1'-0"

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Architects and Planners
1050 Massachusetts Avenue
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LAND-USE PERMIT SET

Number	Revision	Date
1	ADDENDUM NO.2	11.17.2023

Stamp

Job #	2202		
Project	THE ROUX INSTITUTE - GARAGE		
Drawn By	WS/MW	Checked	BC
Date	22 MARCH 2024		
Scale			

Drawing Title

PARKING GARAGE EXTERIOR ELEVATIONS

A20.01

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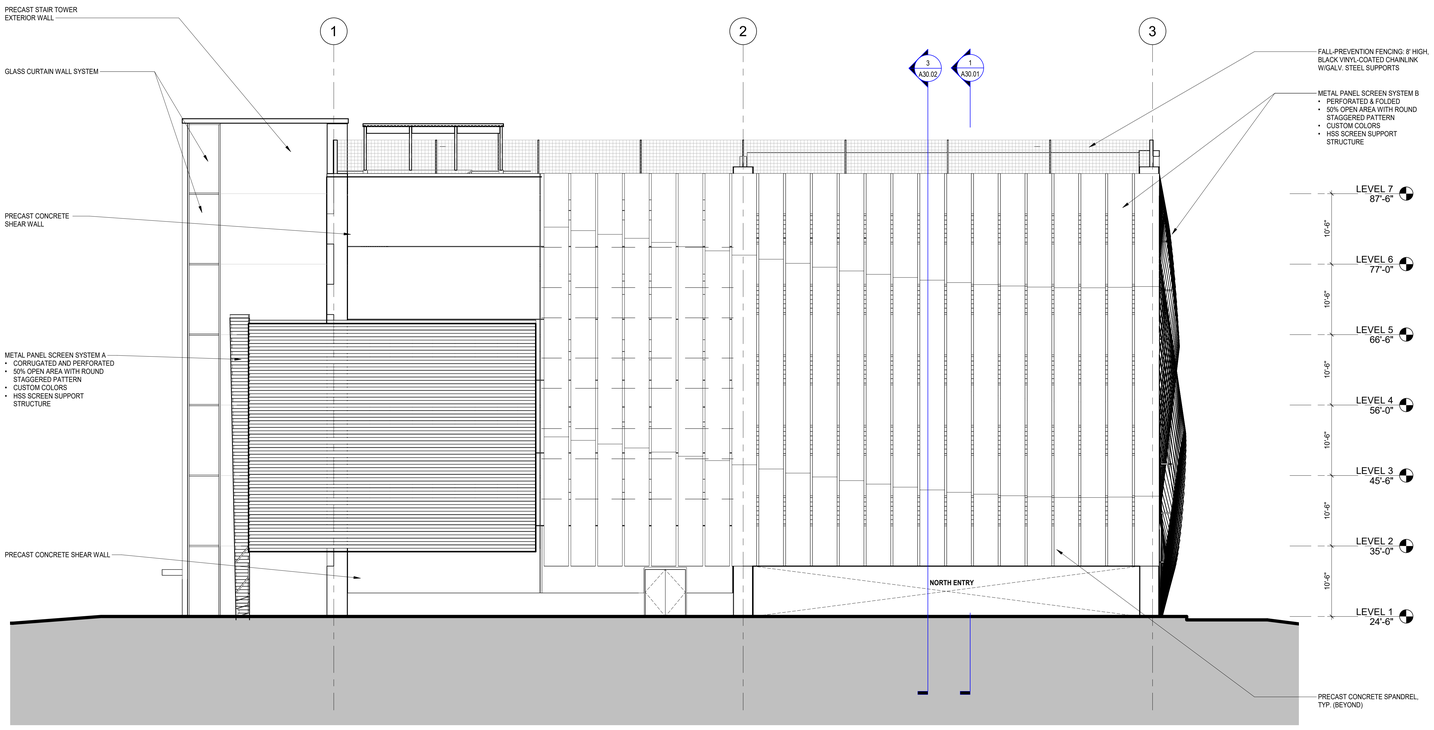
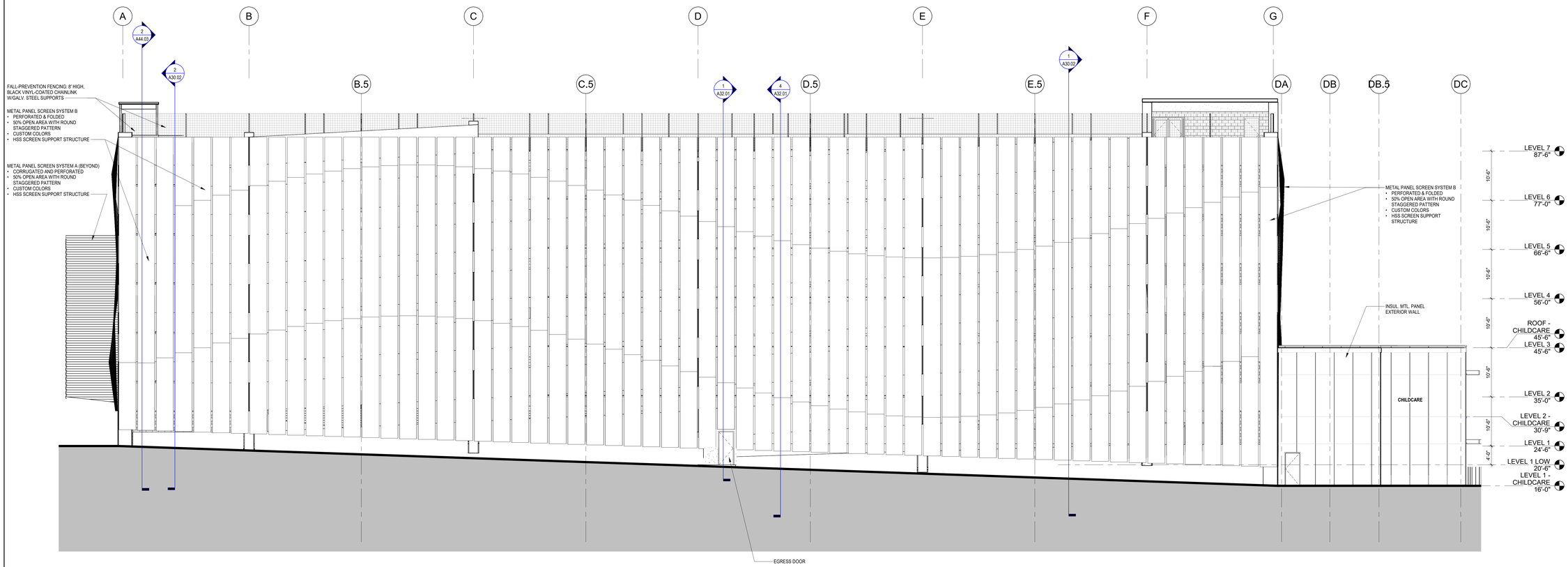


1 GARAGE - NORTH ELEVATION
1/8" = 1'-0"



2 GARAGE - WEST ELEVATION
1/8" = 1'-0"

GENERAL NOTES

1. ELECTRICAL - LIGHTING: INTERIOR BUILDING LIGHTING SHALL COMPLY WITH ANSI/ASHRAE/IES STANDARD 90.1-2022.
2. ELECTRICAL - POWER: RECEPTACLES WILL BE PROVIDED ADJACENT TO INTERIOR BIKE PARKING AS REQUIRED.

IDEALS
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LAND-USE PERMIT SET

Number	Revision	Date
1	ADDENDUM NO.2	11.17.2023

Stamp

Job #	2202
Project	THE ROUX INSTITUTE - GARAGE
Drawn By	WS/MW
Checked	BC
Date	22 MARCH 2024
Scale	

Drawing Title

PARKING GARAGE EXTERIOR ELEVATIONS

A20.02

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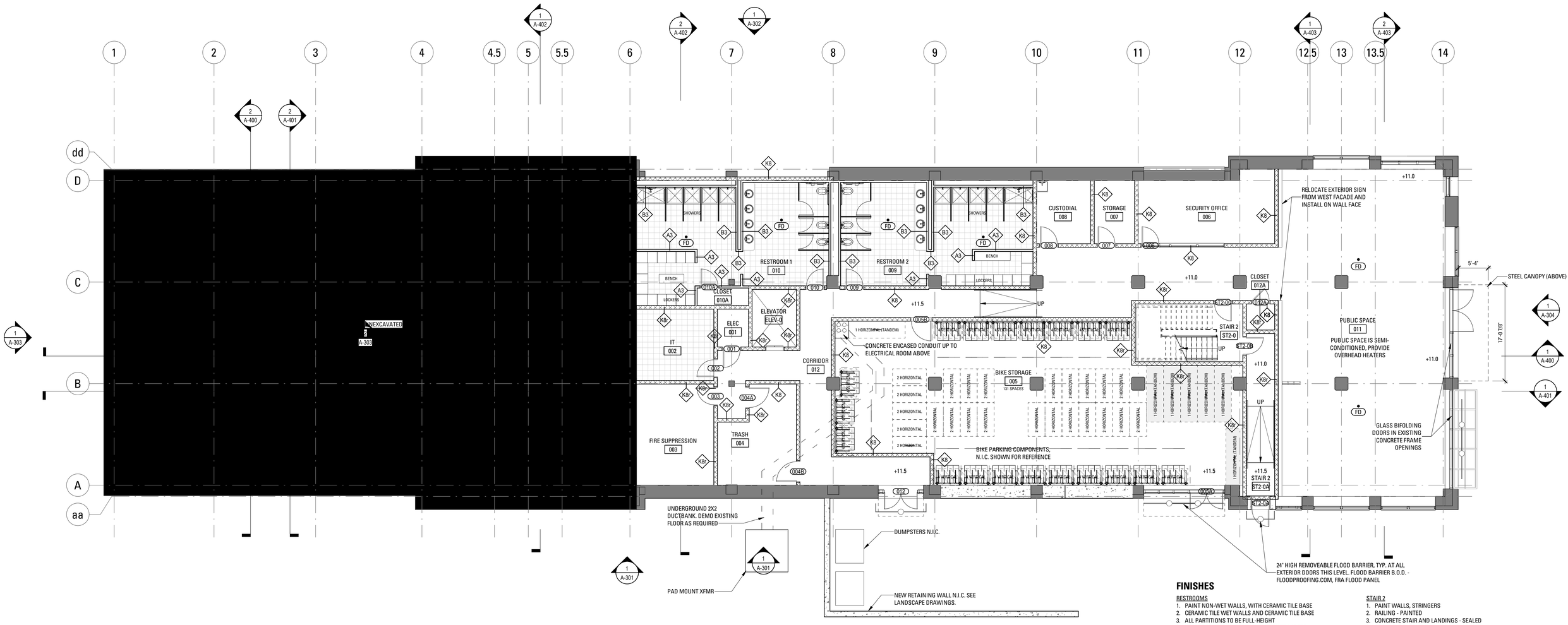


1 LOWER LEVEL FLOOR PLAN

SCALE: 1/8" = 1'-0"

NOTE WELL: THIS ENTIRE FLOOR TO BE RAISED ABOVE EXISTING CONCRETE LEVEL OF 9.5'. SEE ELEVATION NUMBERS ON PLAN AND BUILDING SECTIONS.

NOTE : INTERIOR FACE OF EXTERIOR WALLS IN RESTROOMS ONLY TO BE FURRED OUT WITH 3-5/8" STUD W/ MINERAL WOOL INSULATION AND FINISHED W/ PAINT ON (1) LAYER 5/8" TYPE 'X' DRYWALL. REMAINING EXTERIOR WALLS TO REMAIN AS-IS BUT RECEIVE NEW PAINT

BIKE RACK NOTES

- VERTICAL BIKE RACKS (HOLD 4 BIKES)
- HORIZONTAL BIKE RACKS (HOLD 2 BIKES)
- HORIZONTAL BIKE RACKS (HOLD 1 TANDEM BIKE)

*ASSUMING 25% OF BIKE RACKS HAVE OUTLETS FOR E-BIKE

FINISHES

RESTROOMS
1. PAINT NON-WET WALLS, WITH CERAMIC TILE BASE
2. CERAMIC TILE WET WALLS AND CERAMIC TILE BASE
3. ALL PARTITIONS TO BE FULL-HEIGHT
4. CERAMIC TILE FLOOR (THIN SET) OVER CONCRETE
5. ACT CEILING
6. RECESS LIGHTING, WALL MOUNT AT MIRROR
7. FLOOR DRAIN IN FLOOR

IT
1. NO PAINT ON WALLS, NO BASE
2. STATIC-FREE VCT FLOOR - GLUED
3. NO CEILING
4. SURFACE MOUNT LIGHT

CUSTODIAL/TRASH/ELEC/FIRE SUPPRESSION
1. FRP ON ALL WALLS
2. FLOOR DRAIN IN FLOOR
3. EPOXY FLOOR FINISH OVER CONCRETE TOPPING
4. NO CEILING
5. SURFACE MOUNT LIGHT

STAIR 2
1. PAINT WALLS, STRINGERS
2. RAILING - PAINTED
3. CONCRETE STAIR AND LANDINGS - SEALED
4. CUSTOM GUARD RAIL - PAINTED
5. SURFACE MOUNTED LIGHTING

OFFICE/PUBLIC SPACE/CORRIDOR
1. PAINT EXTERIOR WALLS, CORE WALLS
2. SEAL EXISTING CONCRETE COLUMNS
3. PAINT EXISTING CEILING
4. SURFACE MOUNTED (CEILING) LIGHTING
5. SEAL NEW CONCRETE FLOOR

BIKE STORAGE
1. PAINT EXTERIOR WALLS, CORE WALLS
2. STOREFRONT ON SOUTH WALL - FULL LENGTH
3. SEAL EXISTING CONCRETE COLUMNS
4. PAINT EXISTING CEILING
5. SURFACE MOUNTED (CEILING) LIGHTING
6. SEAL NEW CONCRETE FLOOR

NOTE: ALL GWB THIS FLOOR TO BE MOISTURE RESISTANT

PROJECT NORTH
TRUE NORTH

LICENSED ARCHITECT Jason Harvey ARCHCAD STATE OF MAINE

Roux Institute Bean Building
Project # 22.031

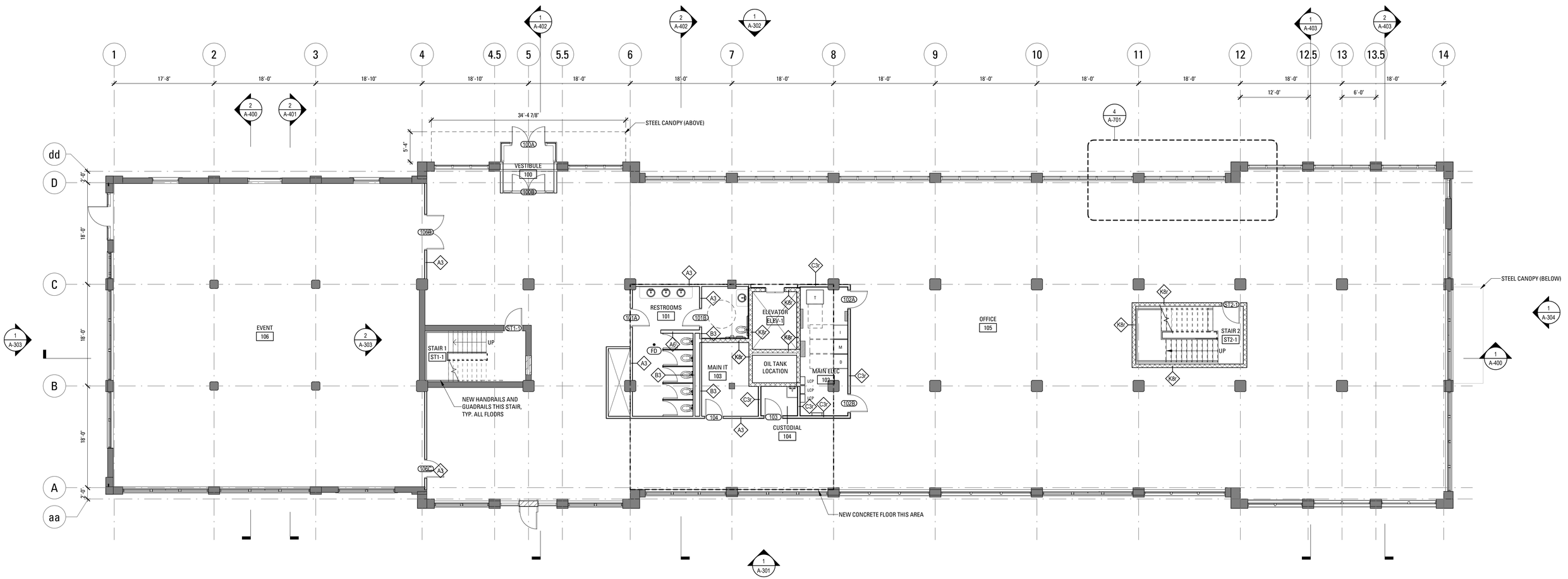
Northeastern University - IDEALS
Portland, ME 04103

OCTOBER 27, 2023 **LAND-USE PERMIT SET**

Rev.	Date	Revision Title

LOWER LEVEL FLOOR PLAN

A-100



1 FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"

NOTE : INTERIOR FACE OF EXTERIOR WALLS TO BE FURRED OUT WITH 3-5/8" STUD W/ MINERAL WOOL INSULATION AND FINISHED W/ PAINT ON (1) LAYER 5/8" TYPE 'X' DRYWALL

FINISHES

RESTROOMS
1. PAINT NON-WET WALLS, WITH CERAMIC TILE BASE
2. CERAMIC TILE WET WALLS AND CERAMIC TILE BASE
3. CERAMIC TILE FLOOR (THIN SET) OR EPOXY FLOOR OVER EXISTING CONCRETE
4. ACT CEILING
5. RECESS LIGHTING, WALL MOUNT AT MIRROR
6. FLOOR DRAIN IN FLOOR

ELEC/IT/FIRE SUPPRESSION
1. PAINT WALLS, RUBBER BASE
2. STATIC-FREE VCT FLOOR - GLUED
3. NO CEILING
4. SURFACE MOUNT LIGHT

CUSTODIAL/TRASH
1. FRP ON ALL WALLS
2. FLOOR DRAIN IN FLOOR
3. EPOXY FLOOR FINISH OVER EXISTING CONCRETE
4. NO CEILING
5. SURFACE MOUNT LIGHT

STAIR 1
1. PAINT EXISTING CONCRETE/CMU
2. NEW RAILING - PAINTED
3. SEAL EXISTING CONCRETE FLOOR
4. NEW, CUSTOM GUARD RAIL - PAINTED
5. SURFACE MOUNTED LIGHTING

STAIR 2
1. PAINT WALLS, STRINGERS
2. RAILING - PAINTED
3. CONCRETE STAIR AND LANDINGS - SEALED
4. CUSTOM GUARD RAIL - PAINTED
5. SURFACE MOUNTED LIGHTING

OFFICE/EVENT
1. PAINT EXTERIOR WALLS, CORE WALLS
2. SEAL EXISTING CONCRETE COLUMNS
3. PAINT EXISTING CEILING
4. SURFACE MOUNTED (CEILING) LIGHTING
5. SEAL EXISTING CONCRETE FLOOR

PROJECT NORTH
TRUE NORTH

LICENSED ARCHITECT
Jason Farrell
ARC4429
STATE OF MAINE

Roux Institute Bean Building
Project # 22.031

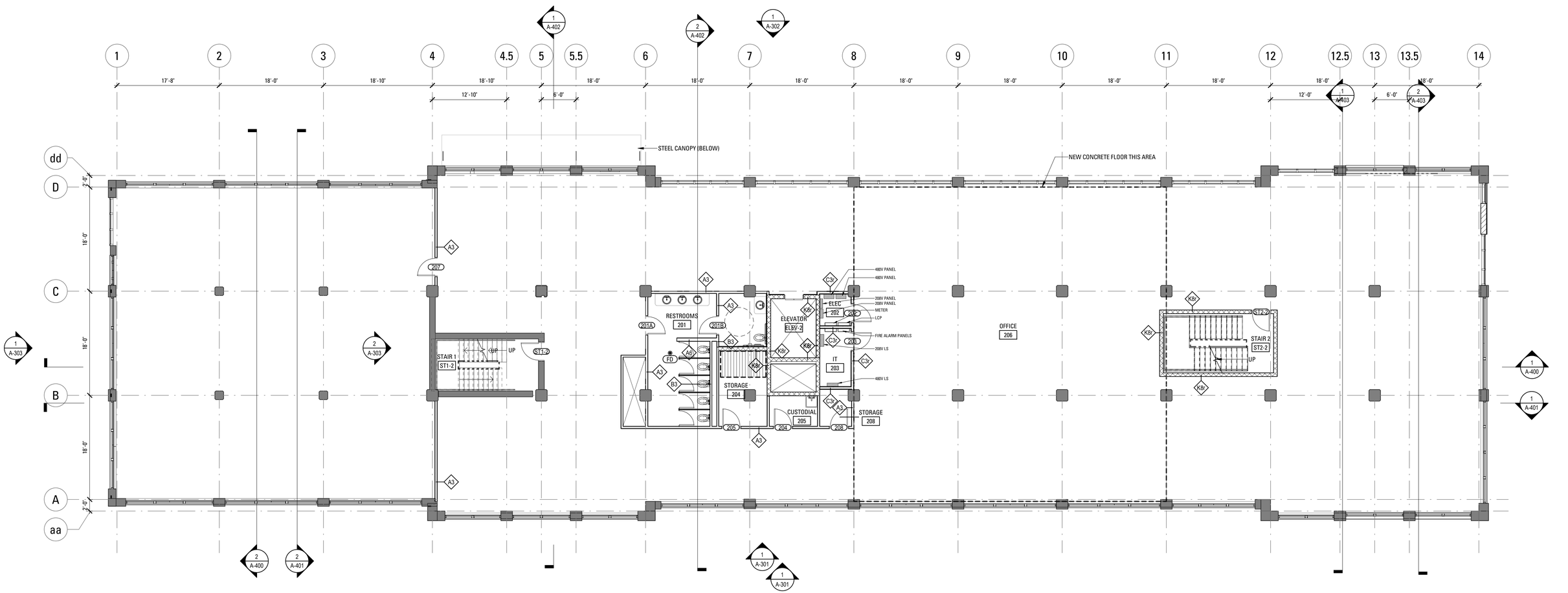
Northeastern University - IDEALS
Portland, ME 04103

OCTOBER 27, 2023 **LAND-USE PERMIT SET**

Rev.	Date	Revision Title

FIRST FLOOR PLAN

A-101



1 SECOND FLOOR PLAN
SCALE: 1/8" = 1'-0"

NOTE : INTERIOR FACE OF EXTERIOR WALLS TO BE FURRED OUT WITH 3-5/8" STUD W/ MINERAL WOOL INSULATION AND FINISHED W/ PAINT ON (1) LAYER 5/8" TYPE 'X' DRYWALL

PROJECT NORTH
TRUE NORTH

REGISTERED ARCHITECT
Justin Farney
ARC14429
STATE OF MAINE

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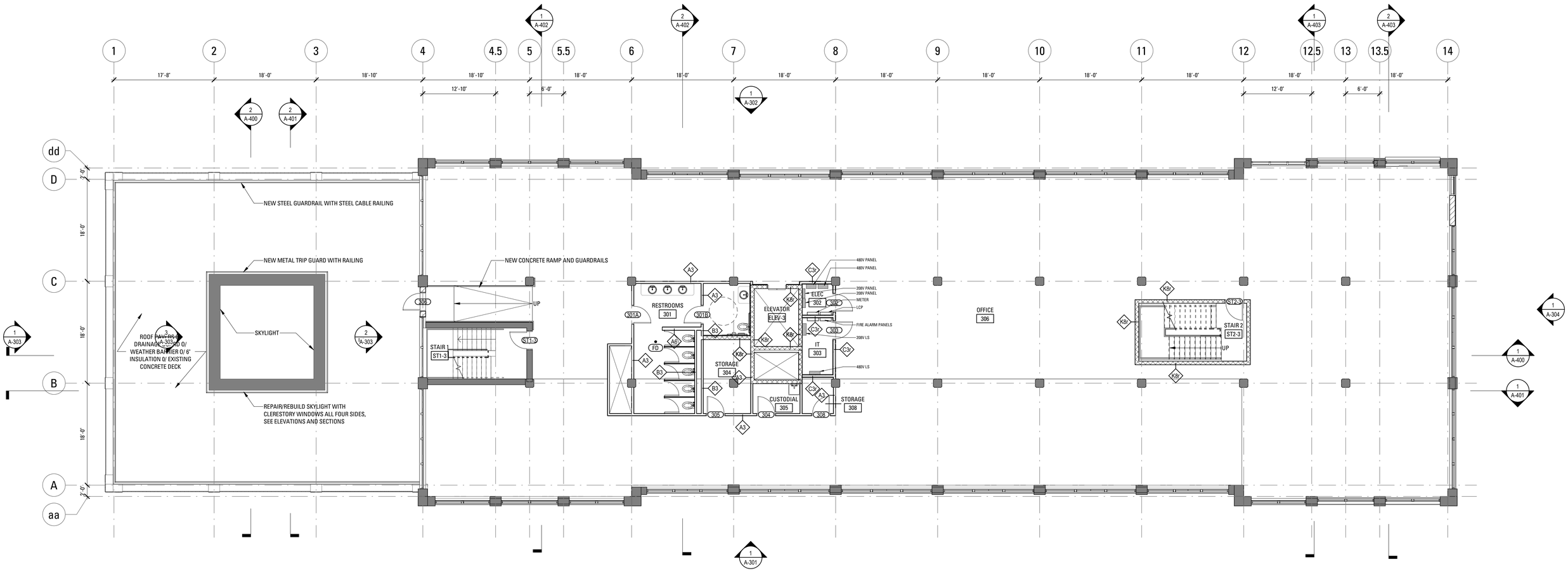
Rev.	Date	Revision Title

SECOND FLOOR PLAN

A-102



1 THIRD FLOOR PLAN

SCALE: 1/8" = 1'-0"

NOTE : INTERIOR FACE OF EXTERIOR WALLS TO BE FURRED OUT WITH 3-5/8" STUD W/ MINERAL WOOL INSULATION AND FINISHED W/ PAINT ON (1) LAYER 5/8" TYPE 'X' DRYWALL

PROJECT NORTH
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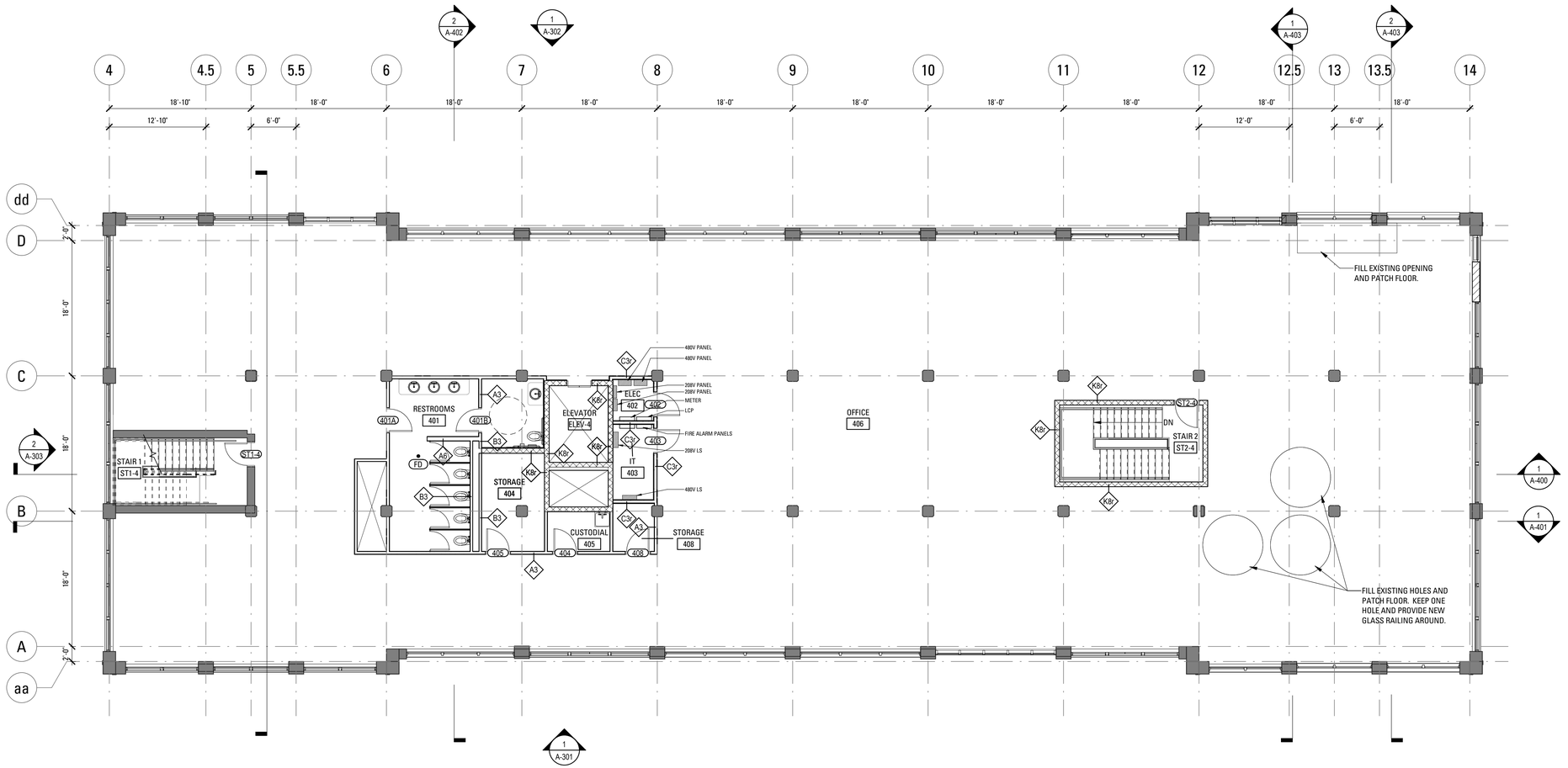
Rev.	Date	Revision Title

THIRD FLOOR PLAN

A-103



1 FOURTH FLOOR PLAN

SCALE: 1/8" = 1'-0"

NOTE : INTERIOR FACE OF EXTERIOR WALLS TO BE FURRED OUT WITH 3-5/8" STUD W/ MINERAL WOOL INSULATION AND FINISHED W/ PAINT ON (1) LAYER 5/8" TYPE 'X' DRYWALL

PROJECT NORTH
TRUE NORTH

REGISTERED ARCHITECT
Justin Farney
ARC4429
STATE OF MAINE

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Project # 22.031

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Portland, ME 04103

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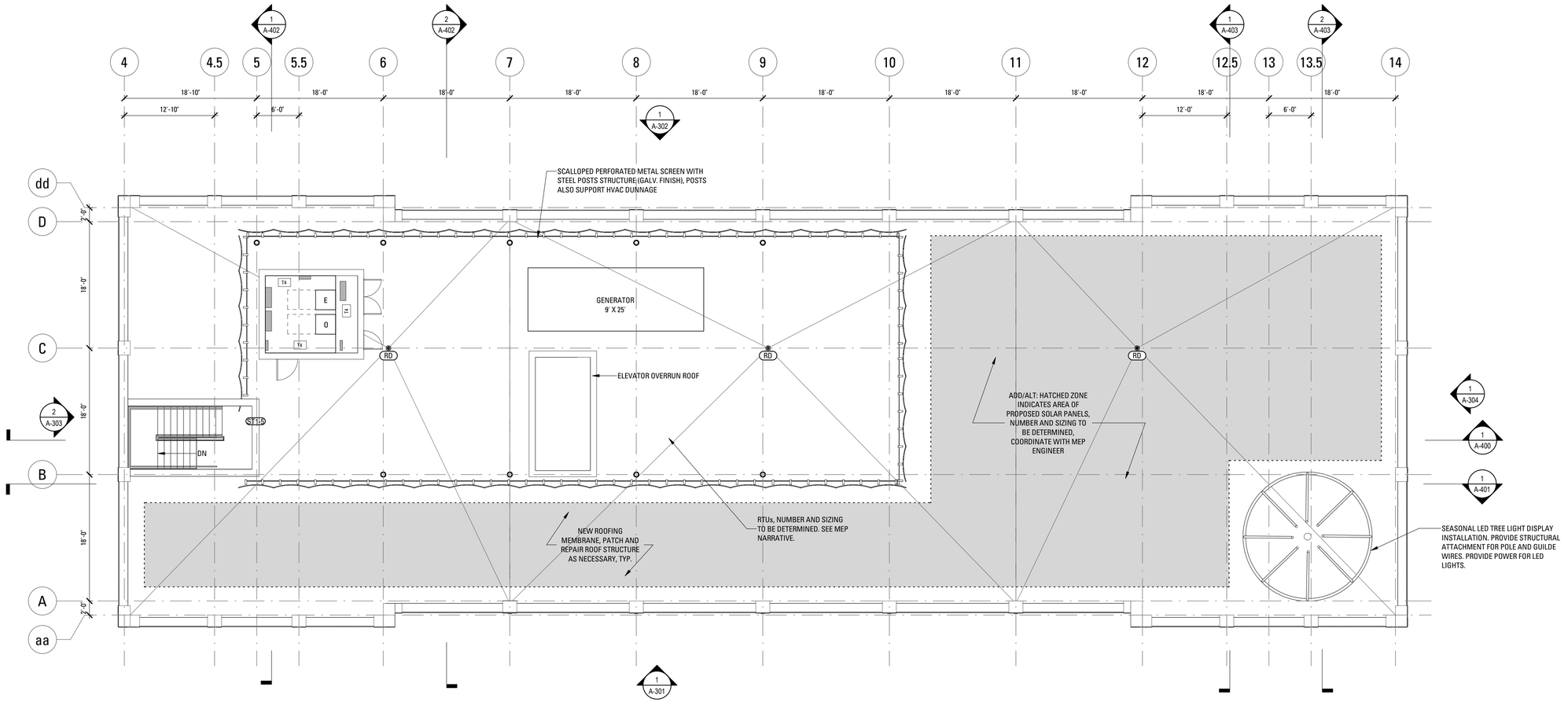
Rev.	Date	Revision Title

FOURTH FLOOR PLAN

A-104



1 ROOF PLAN
SCALE: 1/8" = 1'-0"

PROJECT NORTH
TRUE NORTH

REGISTERED ARCHITECT
ARC4429
STATE OF MAINE

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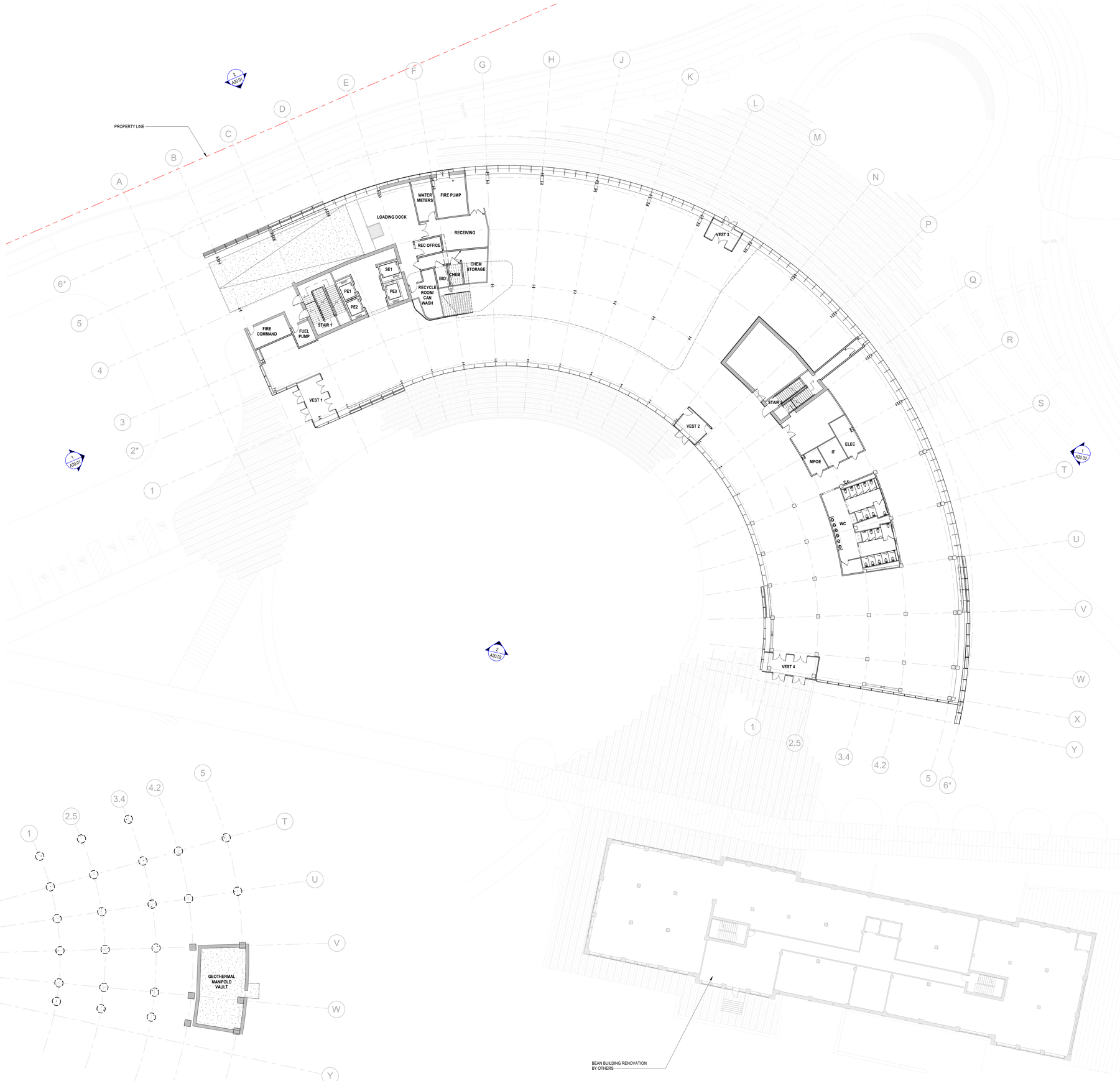
Rev.	Date	Revision Title

ROOF PLAN

A-105

40,100 GSF



2 GSHP MANIFOLD VAULT -
1/16" = 1'-0"

1 1ST FLOOR PLAN
1/16" = 1'-0"

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Number	Revision	Date

LICENSED ARCHITECT
TIMOTHY D. MANSFIELD
No. 3838
STATE OF MAINE
Stamp 10/27/2023

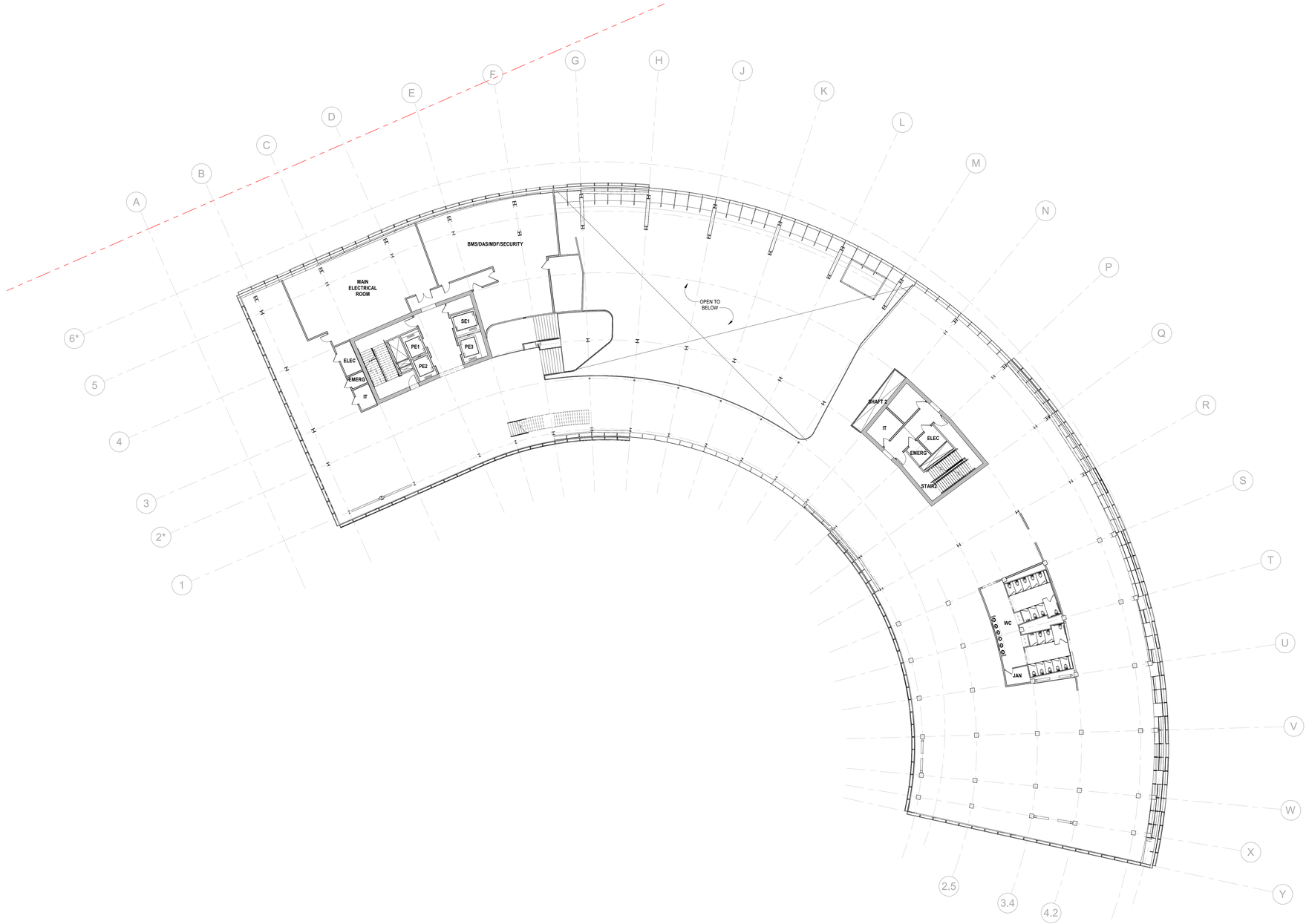
Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	WS
Checked	BC
Date	27 OCTOBER, 2023
Scale	1/16" = 1'-0"

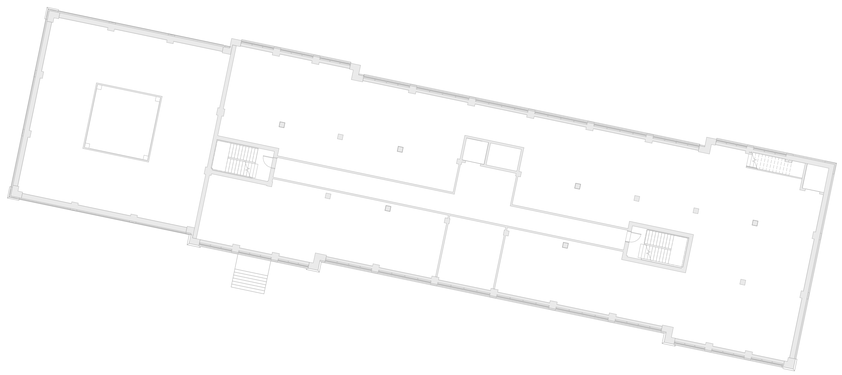
Drawing Title
1ST FLOOR PLAN

A1.01

9/29/2023 12:25:19 PM

34,720 GSF





1 2ND FLOOR PLAN
1/16" = 1'-0"

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Number	Revision	Date

LICENSED ARCHITECT
TIMOTHY D. MANSFIELD
No. 3898
STATE OF MAINE

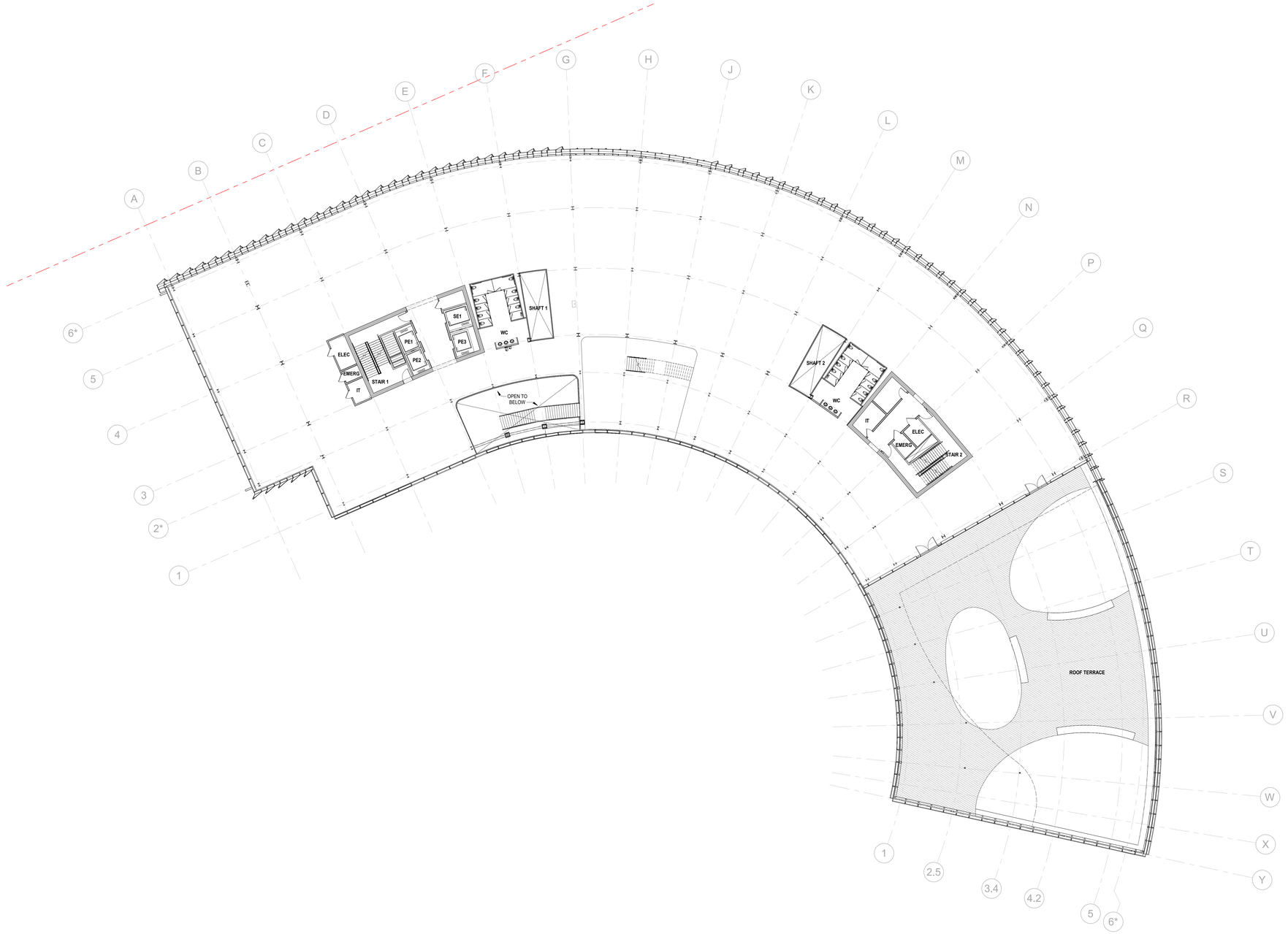
Stamp 10/27/2023

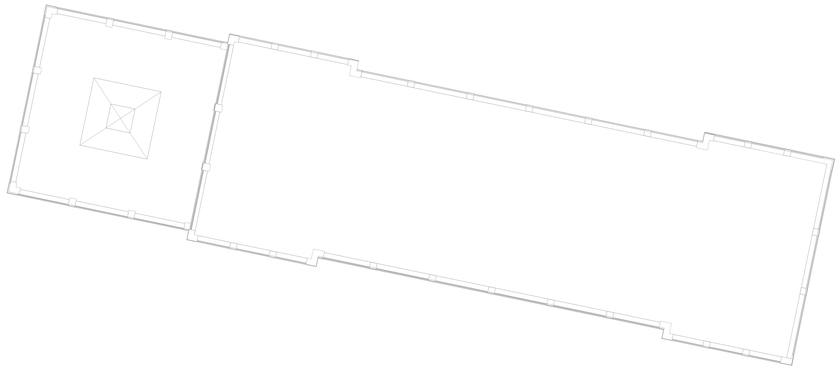
Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	WS Checked BC
Date	27 OCTOBER, 2023
Scale	1/16" = 1'-0"

Drawing Title
2ND FLOOR PLAN

A1.02

39,540 GSF





1 3RD FLOOR PLAN
1/16" = 1'-0"

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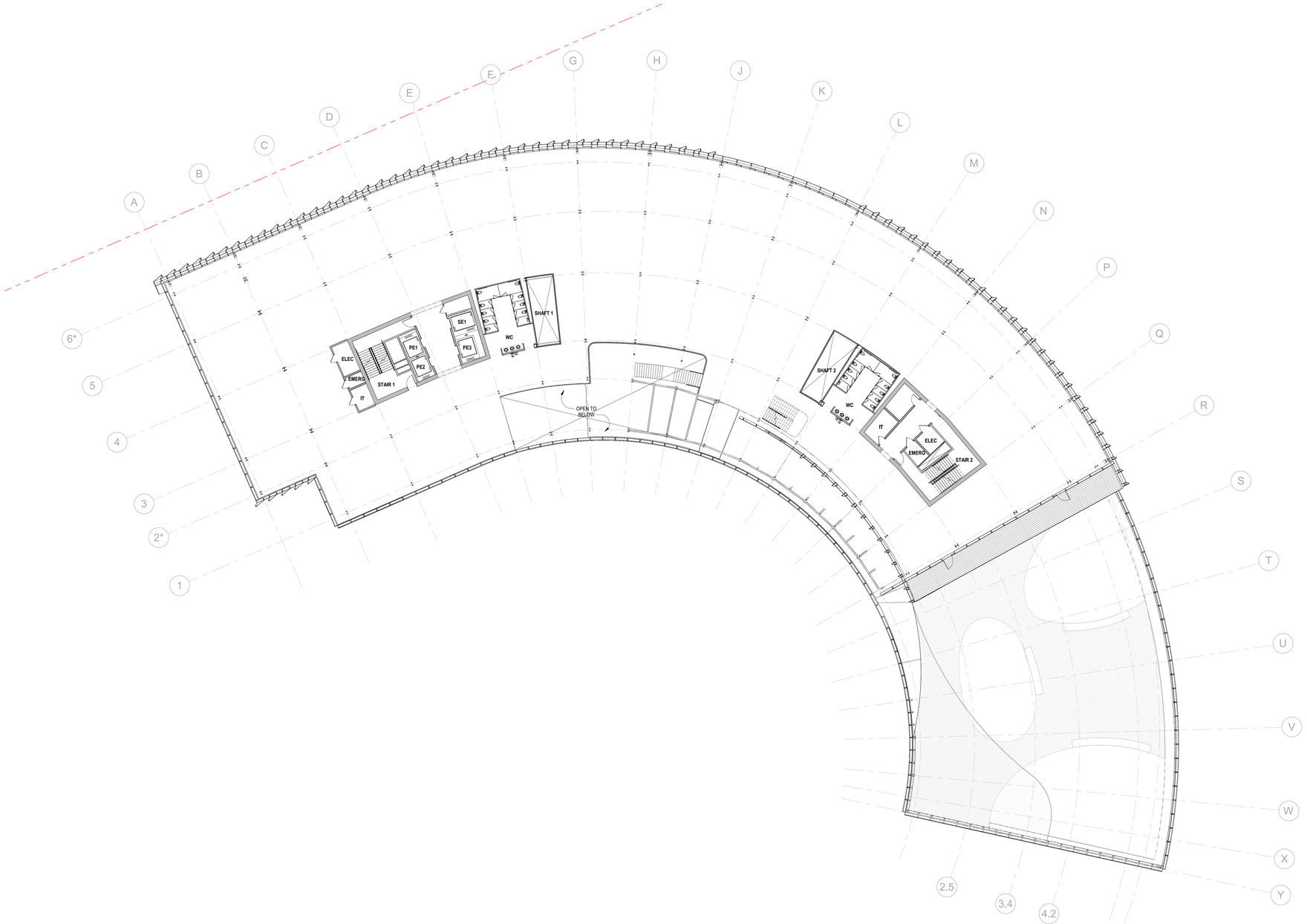
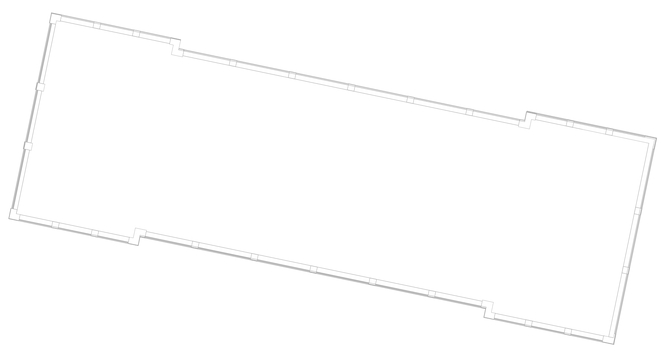
Drawing Title
3RD FLOOR PLAN

A1.03

36,970 GSF





1 4TH FLOOR PLAN
1/16" = 1'-0"

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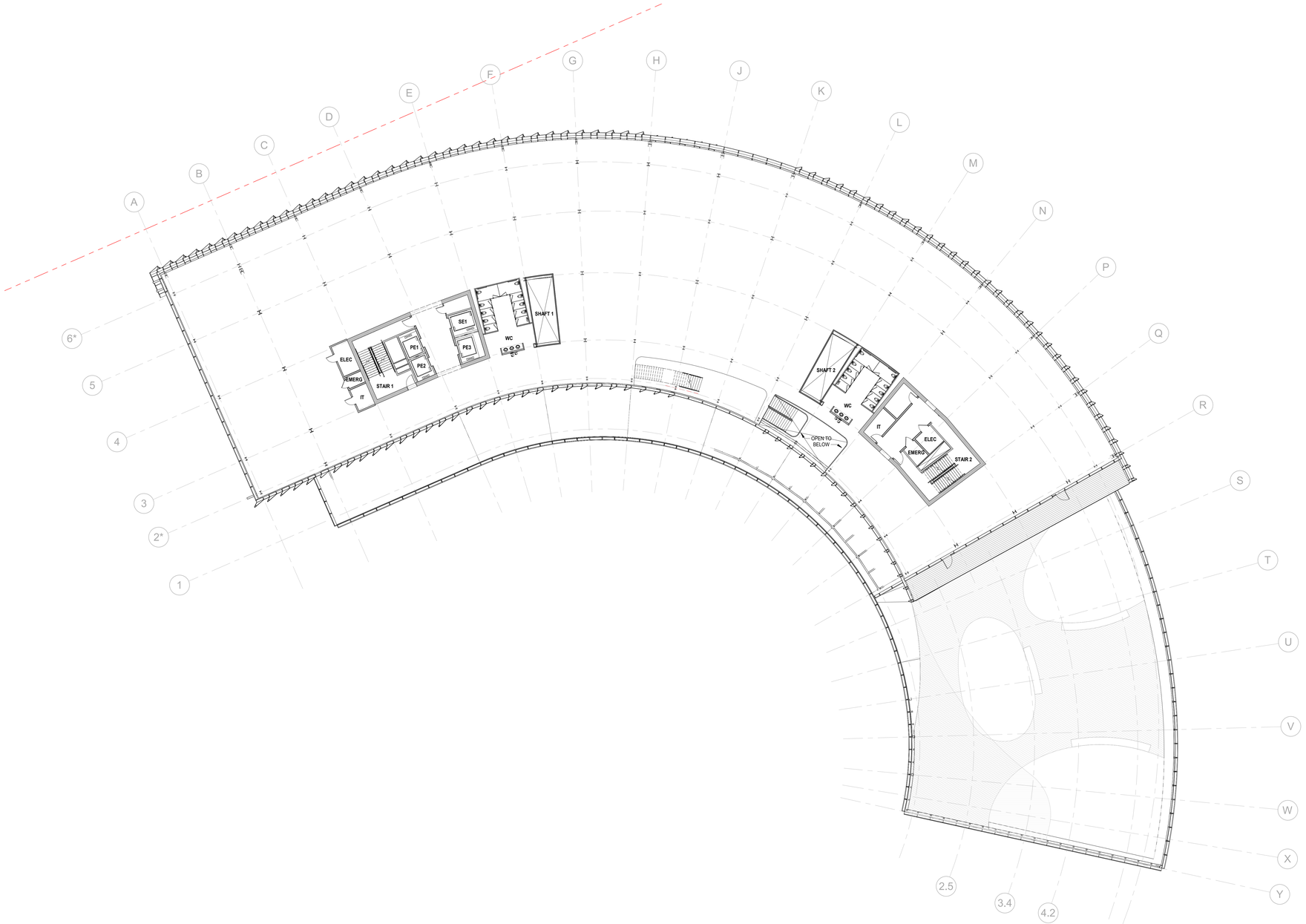
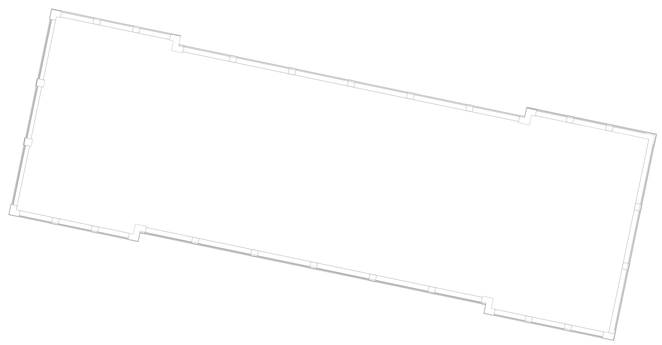
Date	27 OCTOBER, 2023		
Scale	1/16" = 1'-0"		

Drawing Title
4TH FLOOR PLAN

A1.04

37,220 GSF





1 5TH FLOOR PLAN
1/16" = 1'-0"

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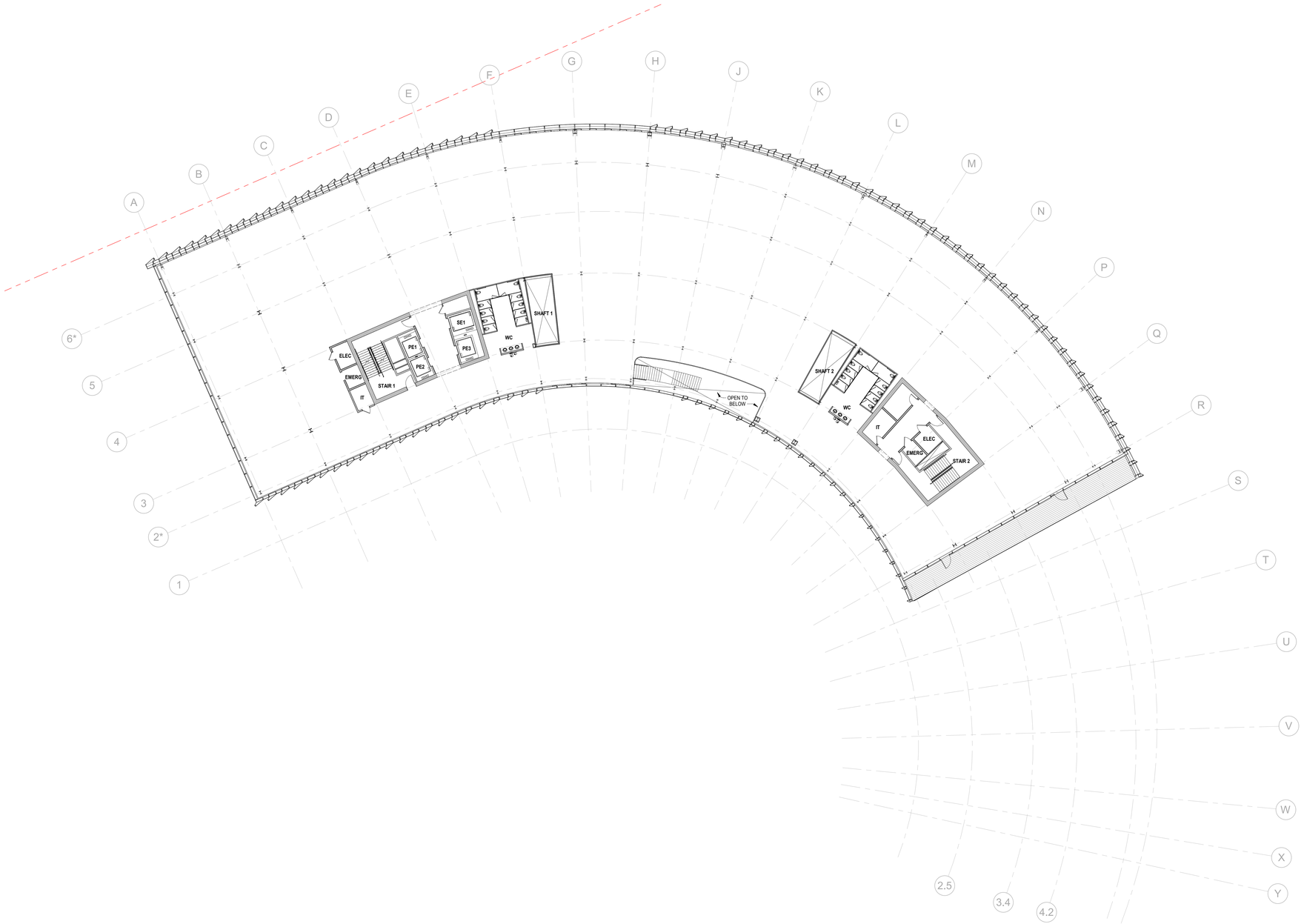
Date	27 OCTOBER, 2023
Scale	1/16" = 1'-0"

Drawing Title
5TH FLOOR PLAN

A1.05

38,510 GSF



1 6TH FLOOR PLAN
1/16" = 1'-0"

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LICENSED ARCHITECT
TIMOTHY D. MANSFIELD
No. 3038
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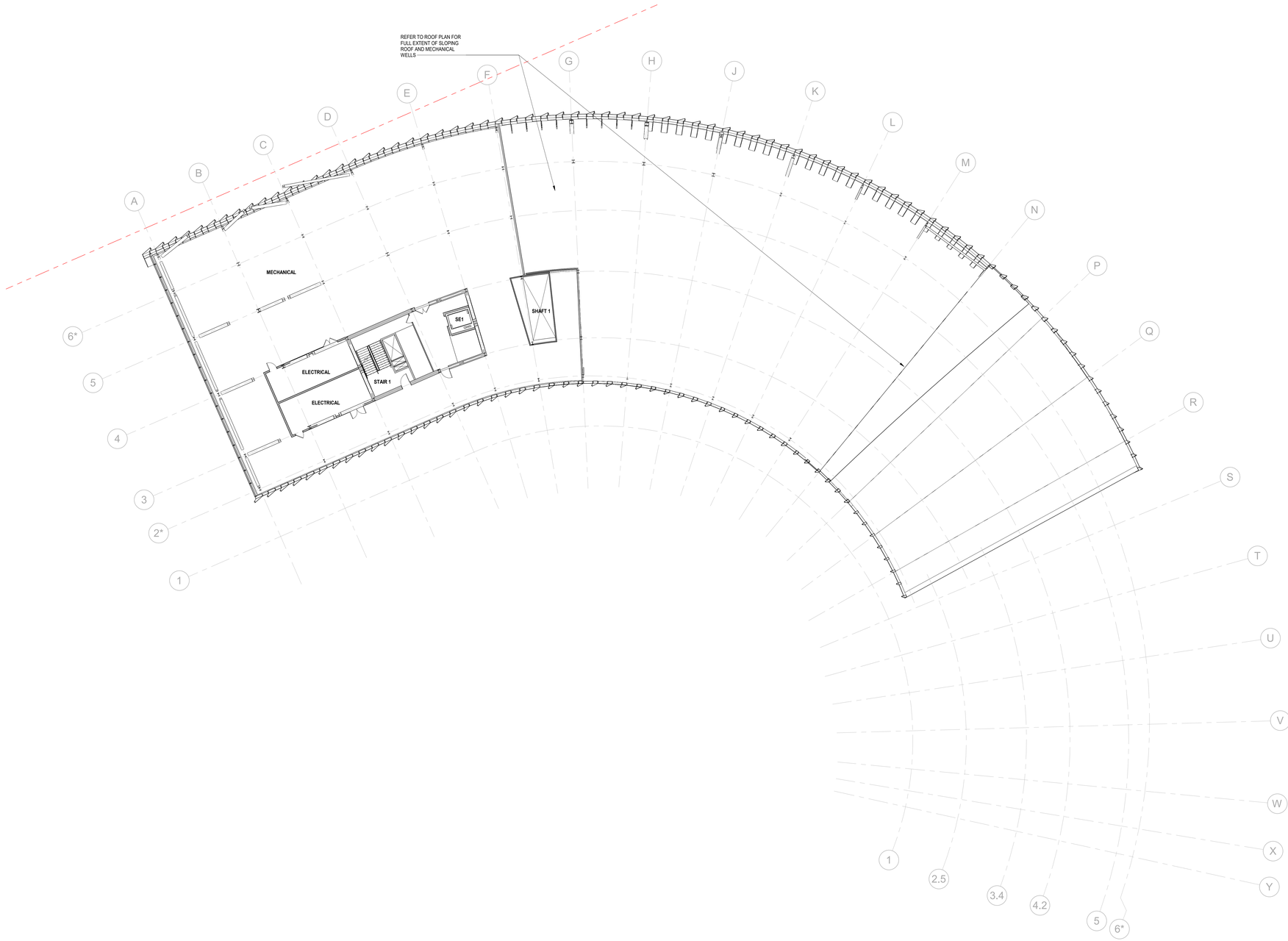
Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	WS
Checked	BC
Date	27 OCTOBER, 2023
Scale	1/16" = 1'-0"

Drawing Title
6TH FLOOR PLAN

A1.06

10,940 GSF



1 7TH FLOOR PLAN
1/16" = 1'-0"

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Date	27 OCTOBER, 2023
Scale	1/16" = 1'-0"

Drawing Title
7TH FLOOR PLAN

A1.07

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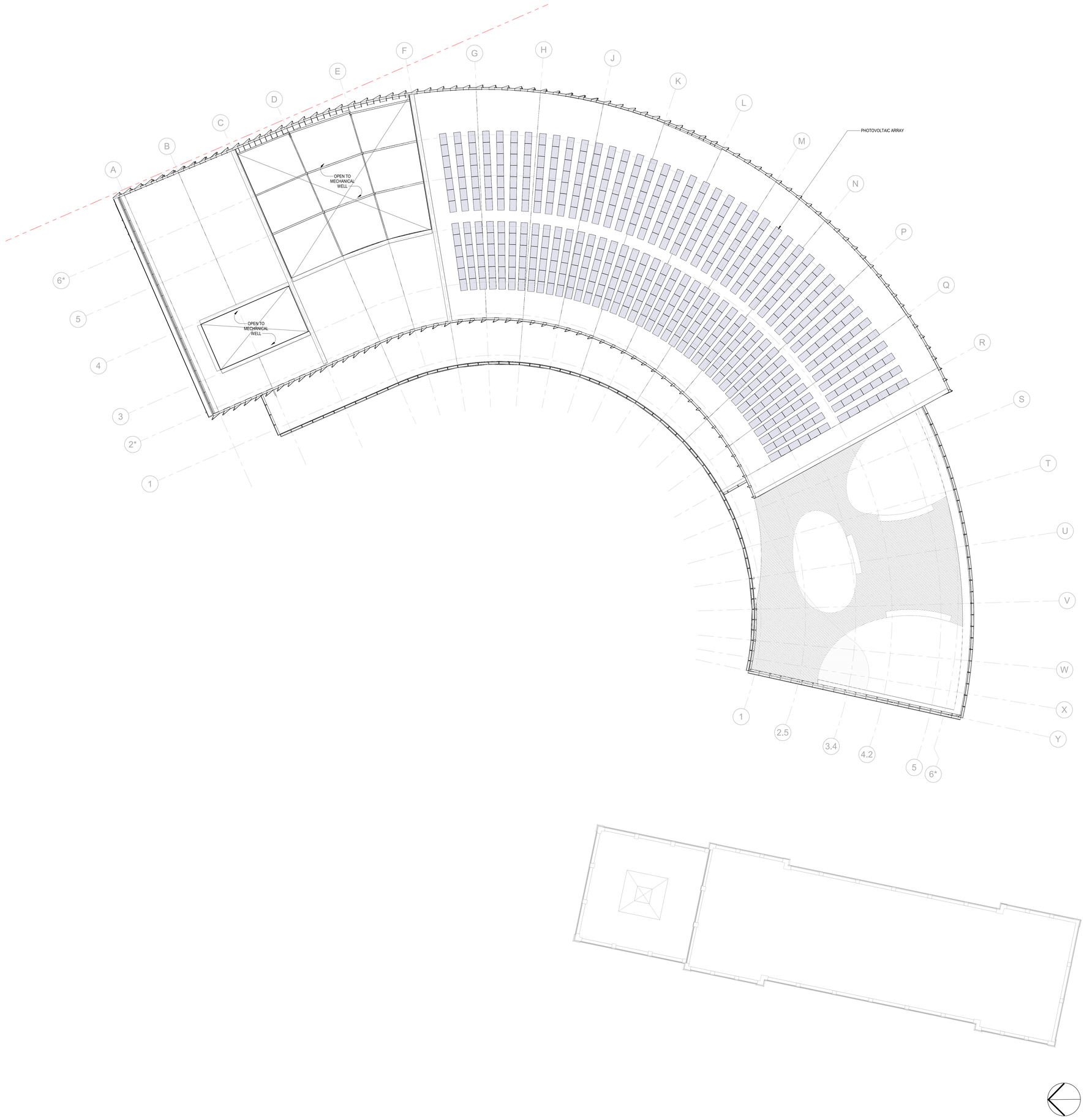

1 ROOF PLAN - OVERALL Copy 2
1/16" = 1'-0"

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LICENSED ARCHITECT
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NO. 3838
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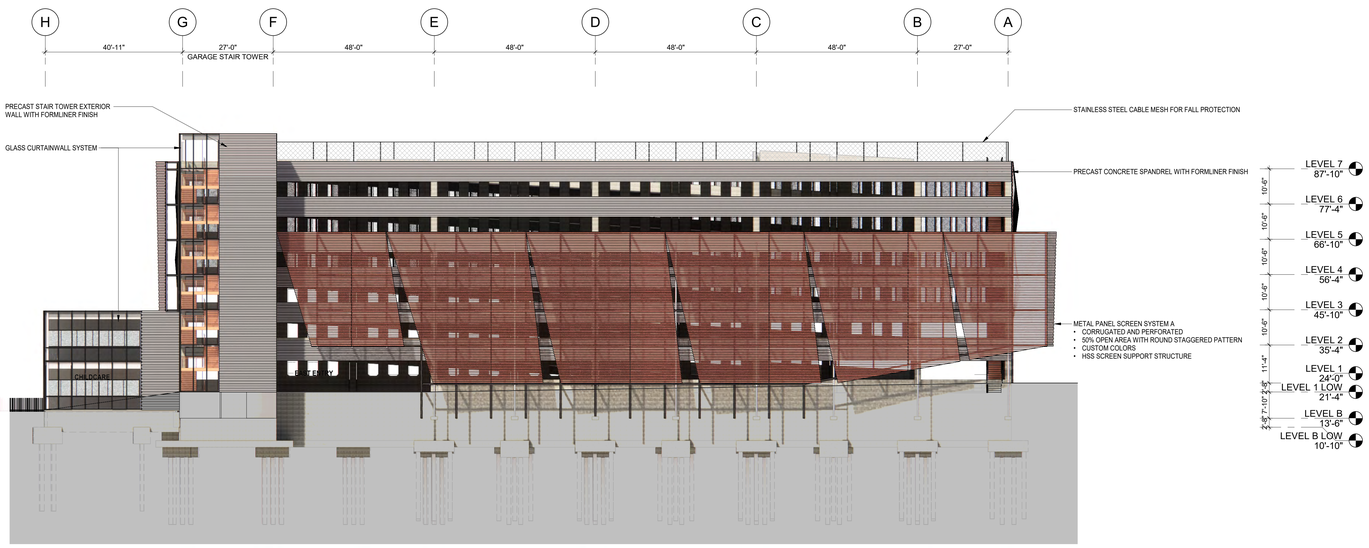
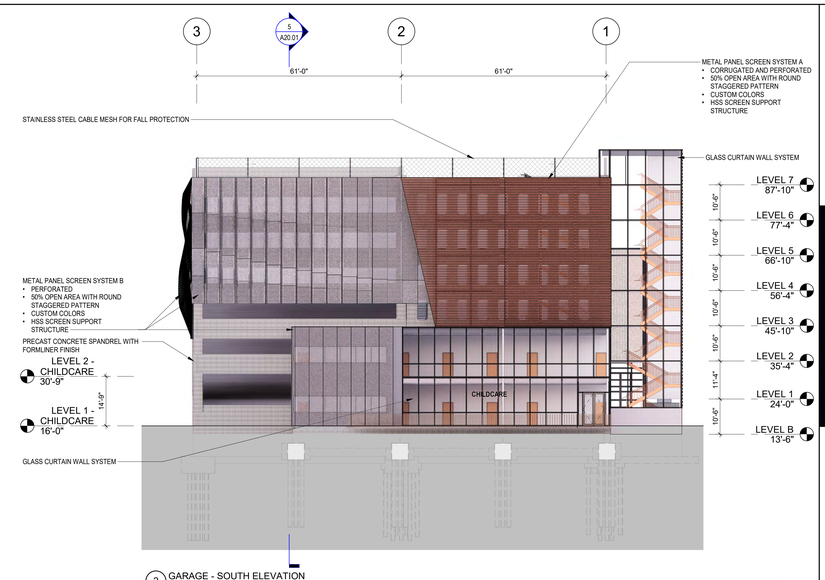
Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	WS
Checked	BC
Date	27 OCTOBER, 2023
Scale	1/16" = 1'-0"

Drawing Title
ROOF PLAN

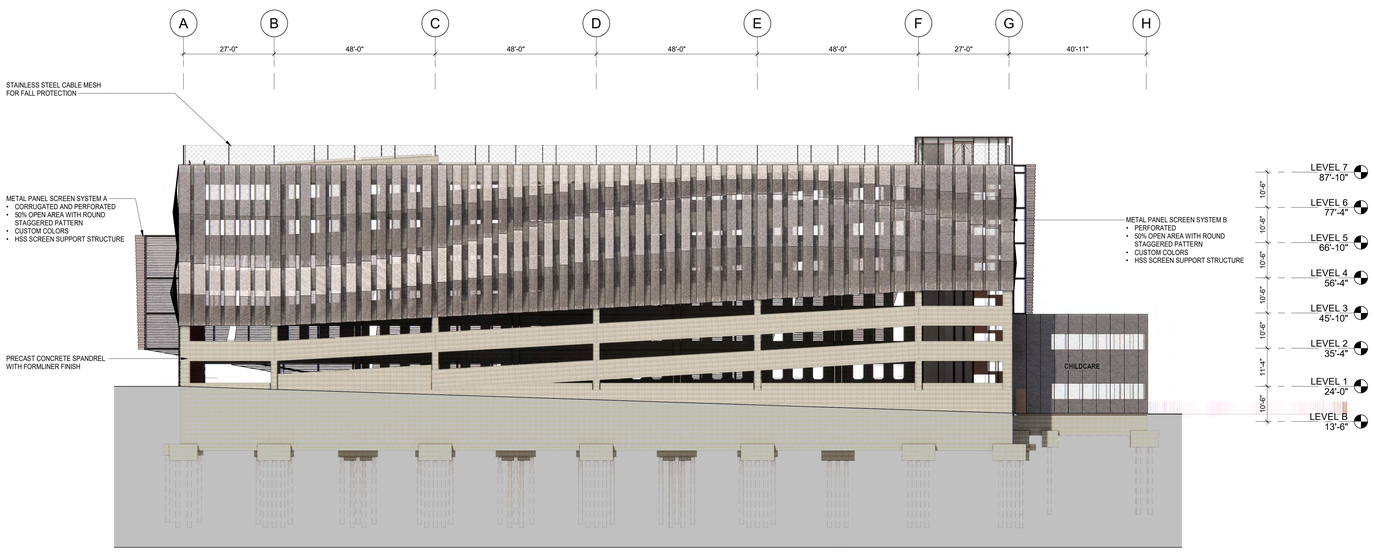
A1.10



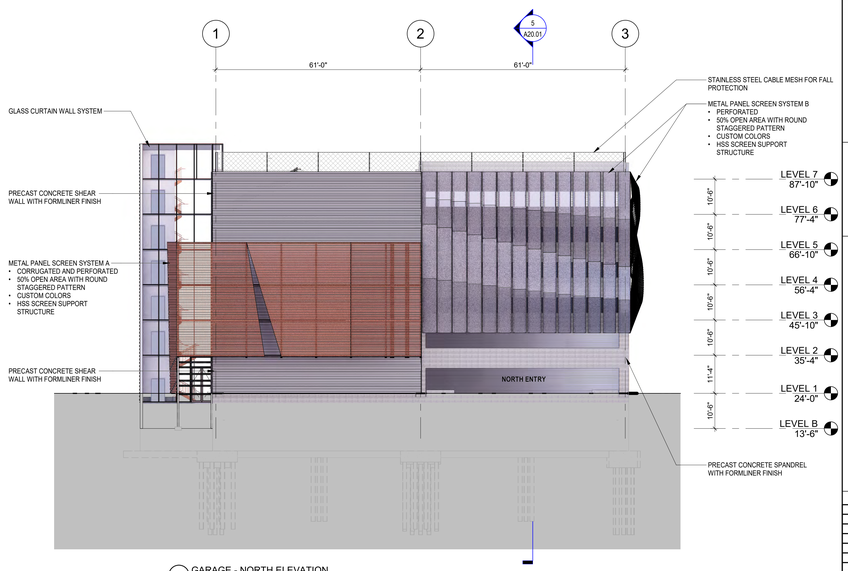
1 GARAGE - EAST ELEVATION
1/16" = 1'-0"



2 GARAGE - SOUTH ELEVATION
1/16" = 1'-0"



3 GARAGE - WEST ELEVATION
1/16" = 1'-0"



4 GARAGE - NORTH ELEVATION
1/16" = 1'-0"



5 GARAGE - SECTION
1/16" = 1'-0"

11/2/2023 11:54:41 AM

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LAND-USE PERMIT SET

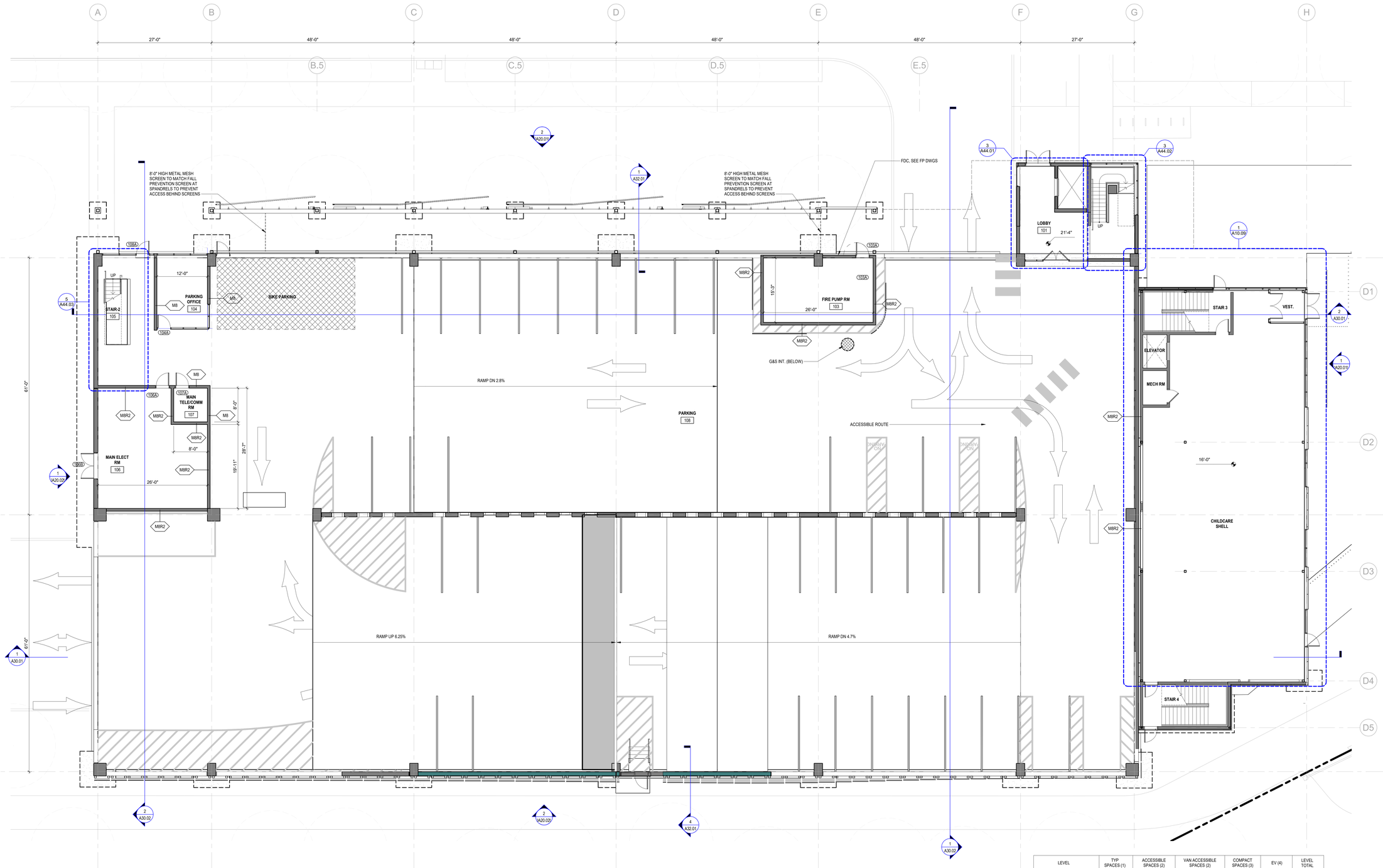
Number	Revision	Date

Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	WS
Checked	BC
Date	27 OCTOBER 2023
Scale	

Drawing Title
PARKING GARAGE EXT. ELEVATIONS AND SECTION

A20.01



1 LEVEL 1 FLOOR PLAN
1/8" = 1'-0"

LEVEL	TYP SPACES (1)	ACCESSIBLE SPACES (2)	VAN ACCESSIBLE SPACES (2)	COMPACT SPACES (3)	EV (4)	LEVEL TOTAL
SITE	6	4	4	0	0	14
LEVEL 01	52	4	0	4	2	62
LEVEL 02	82	2	0	4	4	92
LEVEL 03	83	2	0	4	4	93
LEVEL 04	83	0	0	6	4	93
LEVEL 05	84	0	0	6	4	94
LEVEL 06	81	0	0	6	6	93
LEVEL 07	77	0	0	7	0	84
TOTAL SPACES	548	12	4	37	24	625

	REQUIRED	PROVIDED
ACCESSIBLE SPACES REQUIRED (2%)	12.5	16
VAN SPACES REQUIRED (1/6 OF TOTAL)	2.08	4
EV SPACES PER STUDY	23	24
MAX COMPACT (20%)	143	37

NOTES:
1. TYPICAL SPACES 8'-0" WIDE BY 18'-0" DEEP.
2. ADA SPACES AND AISLE PER ADA REQUIREMENTS.
3. COMPACT SPACES 8'-0" WIDE BY 16'-0" DEEP.
4. EV SPACES 8'-0" WIDE BY 18' DEEP WITH EXTRA SPACE BETWEEN VEHICLES.

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DESIGN DEVELOPMENT GARAGE

Number	Revision	Date

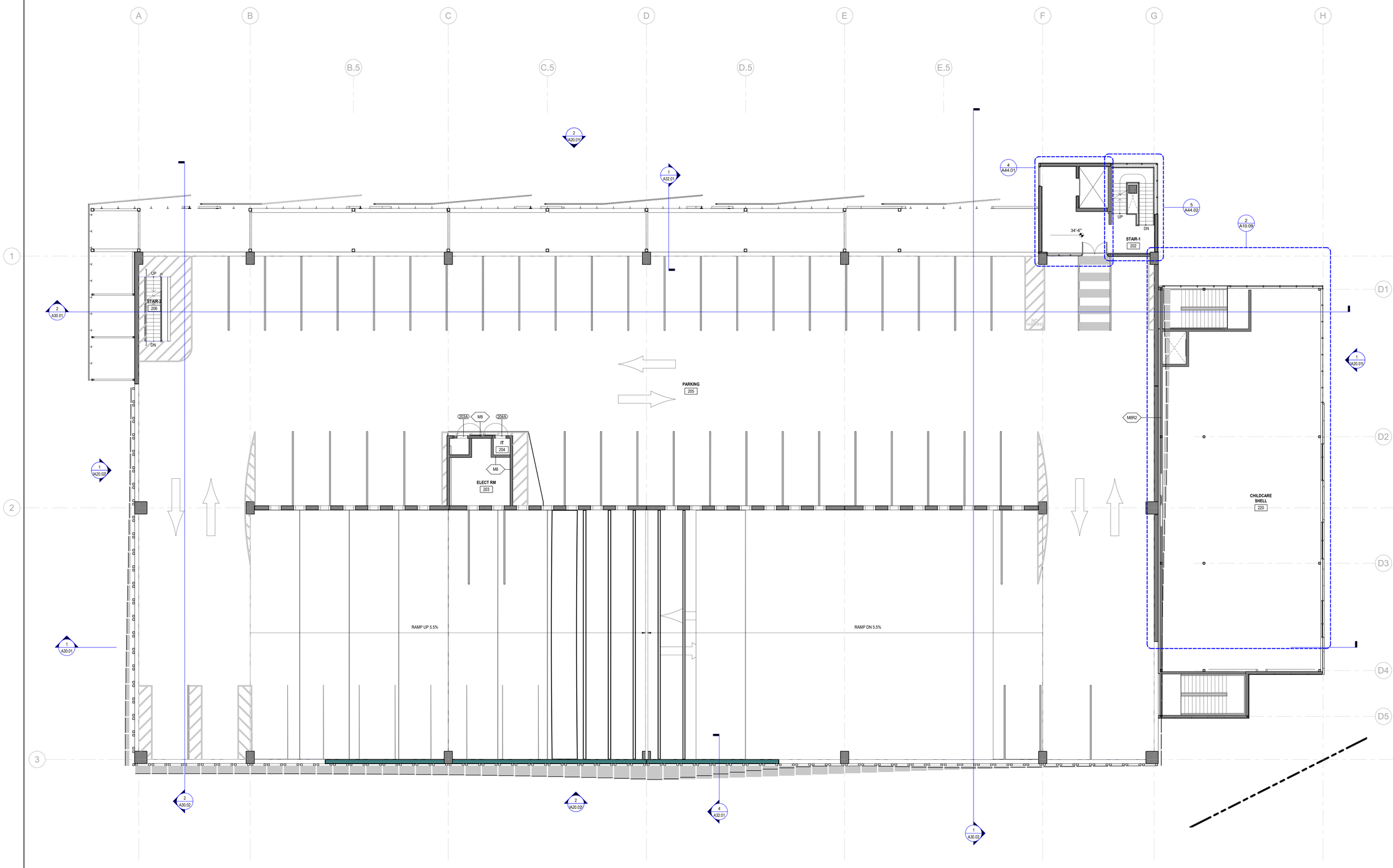
Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	MW
Checked	BC
Date	31 JANUARY 2024
Scale	

Drawing Title
LEVEL-1 FLOOR PLAN

A10.01

2/1/2024 8:51:30 AM



1 LEVEL 2 FLOOR PLAN
1/8" = 1'-0"

2/1/2024 8:51:31 AM

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

DESIGN DEVELOPMENT GARAGE

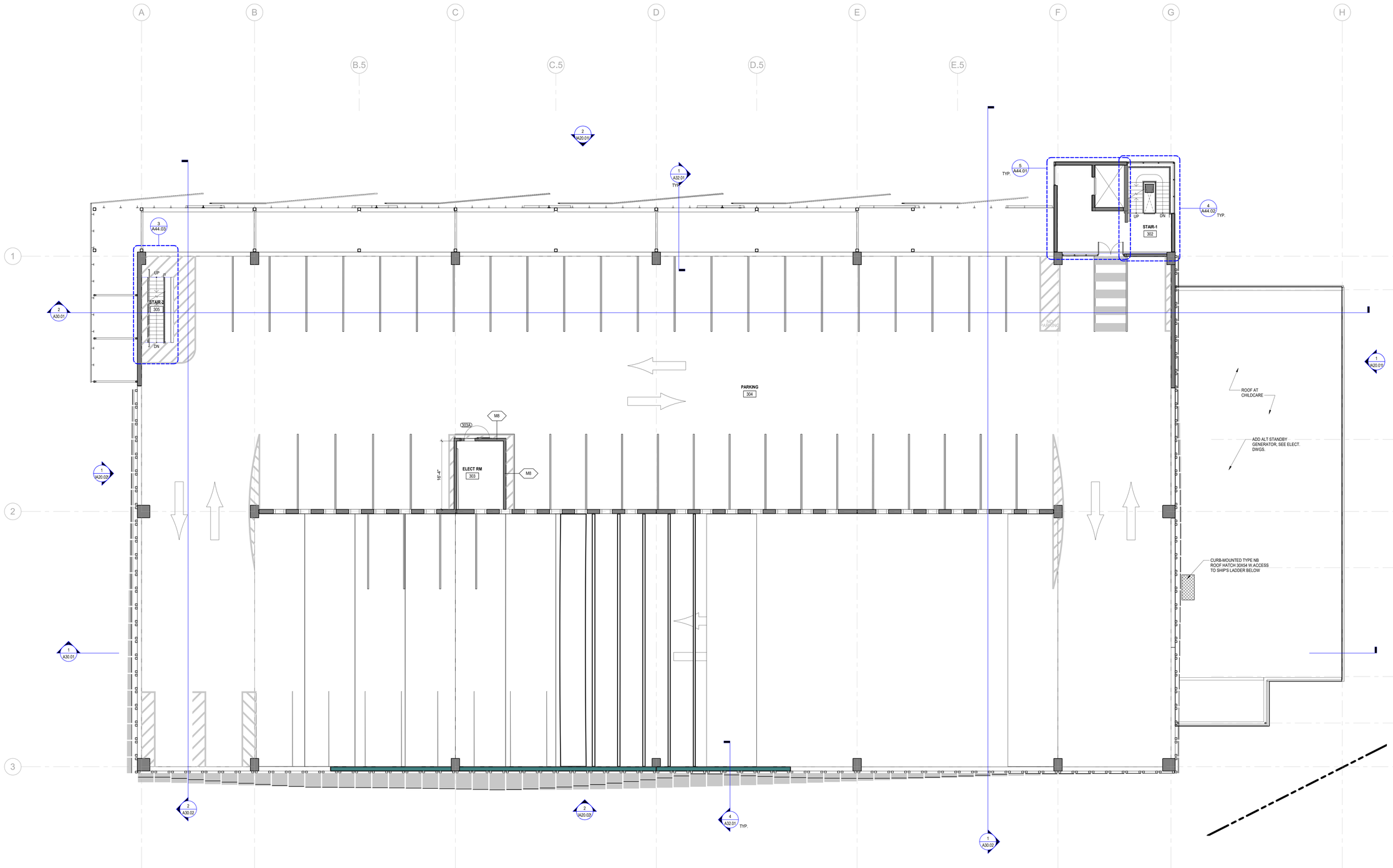
Number	Revision	Date

Stamp

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	MW
Checked	BC
Date	31 JANUARY 2024
Scale	

Drawing Title
LEVEL-2 FLOOR PLAN

A10.02



1 LEVEL 3 FLOOR PLAN
1/8" = 1'-0"

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Scale	

Drawing Title
LEVEL-3 FLOOR PLAN

A10.03

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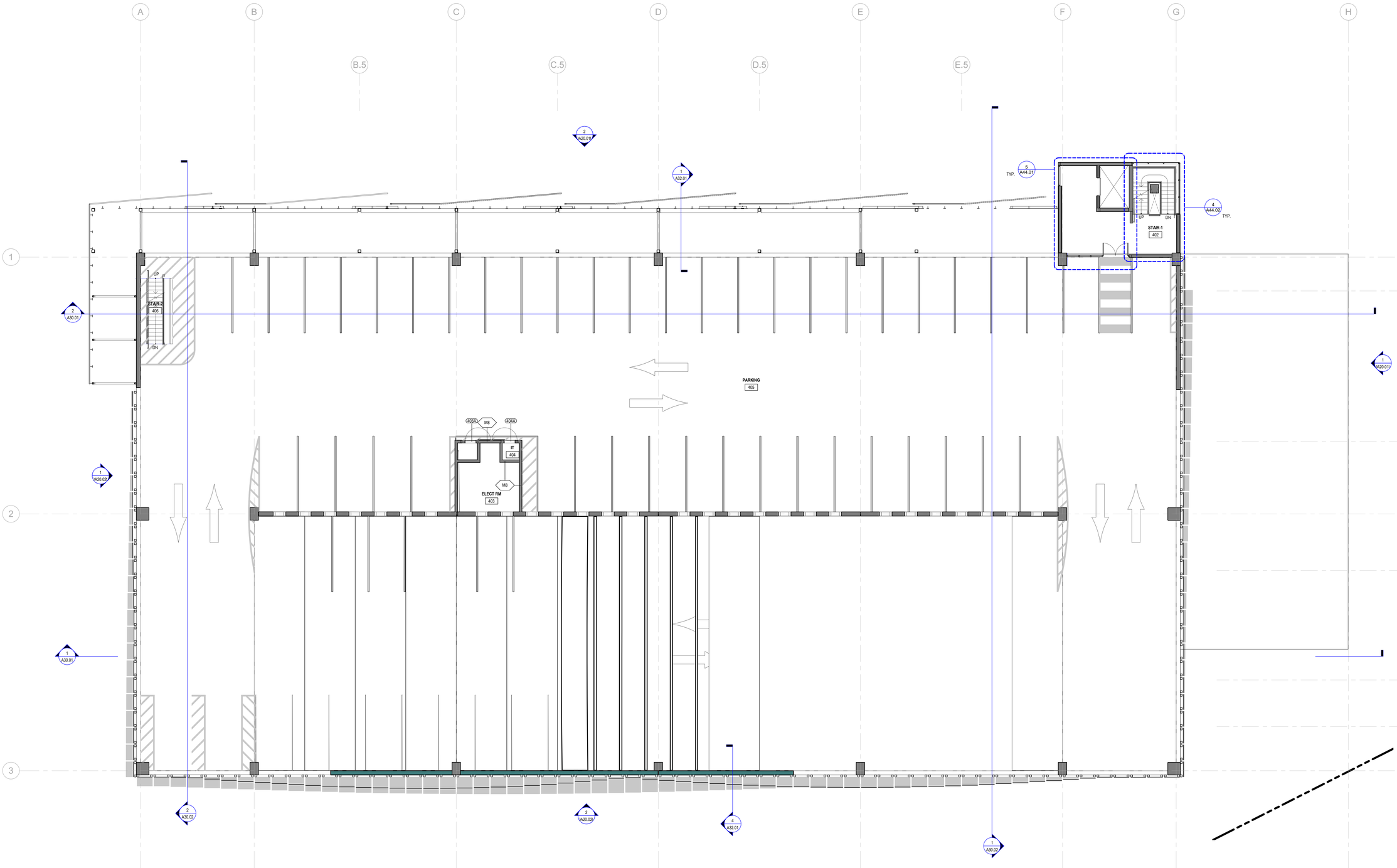

1 LEVEL 4 FLOOR PLAN
1/8" = 1'-0"

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Checked	BC
Date	31 JANUARY 2024
Scale	

Drawing Title
LEVEL-4 FLOOR PLAN

A10.04

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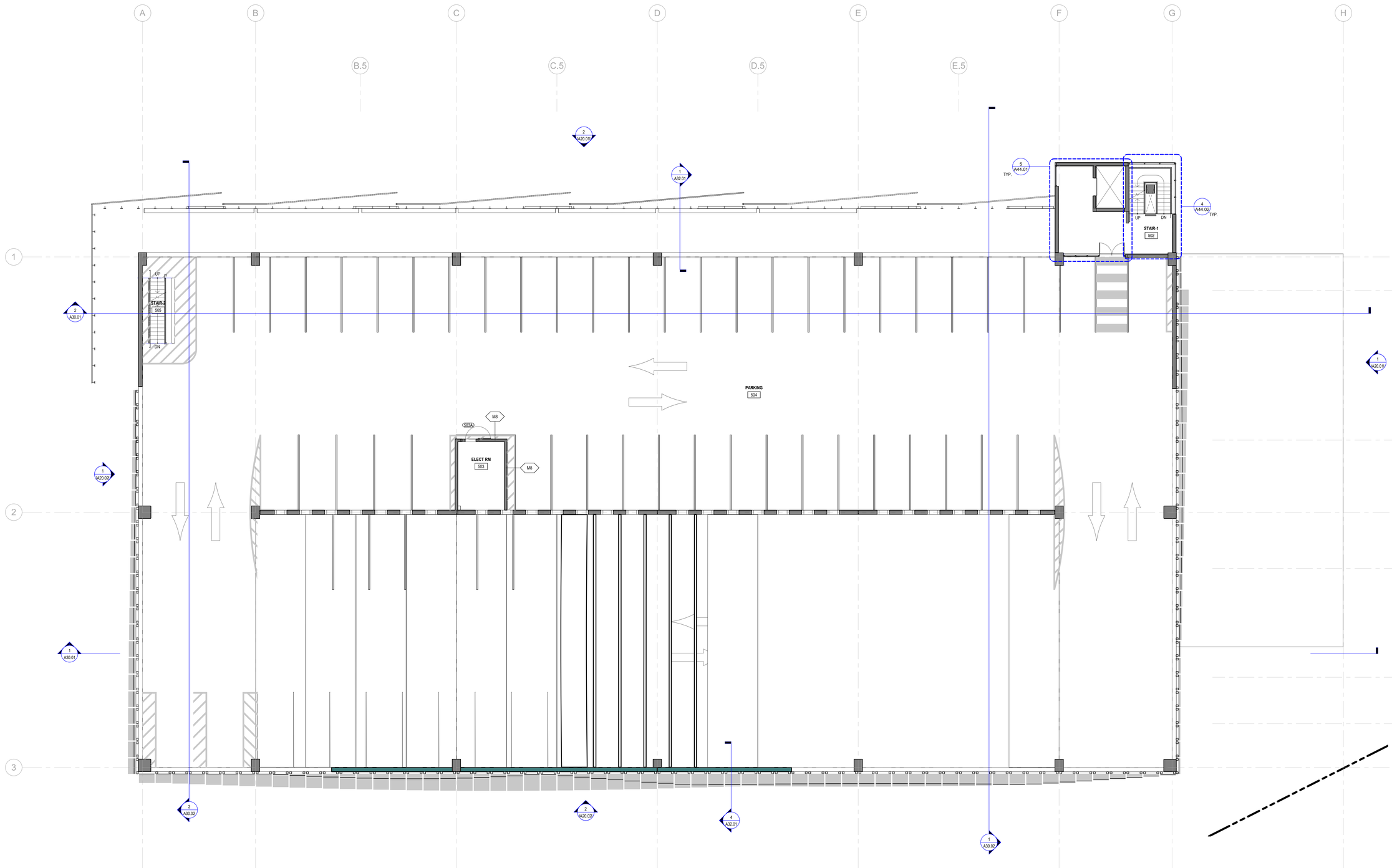

1 LEVEL 5 FLOOR PLAN
1/8" = 1'-0"

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Drawn By	MW
Checked	BC
Date	31 JANUARY 2024
Scale	

Drawing Title
LEVEL-5 FLOOR PLAN

A10.05

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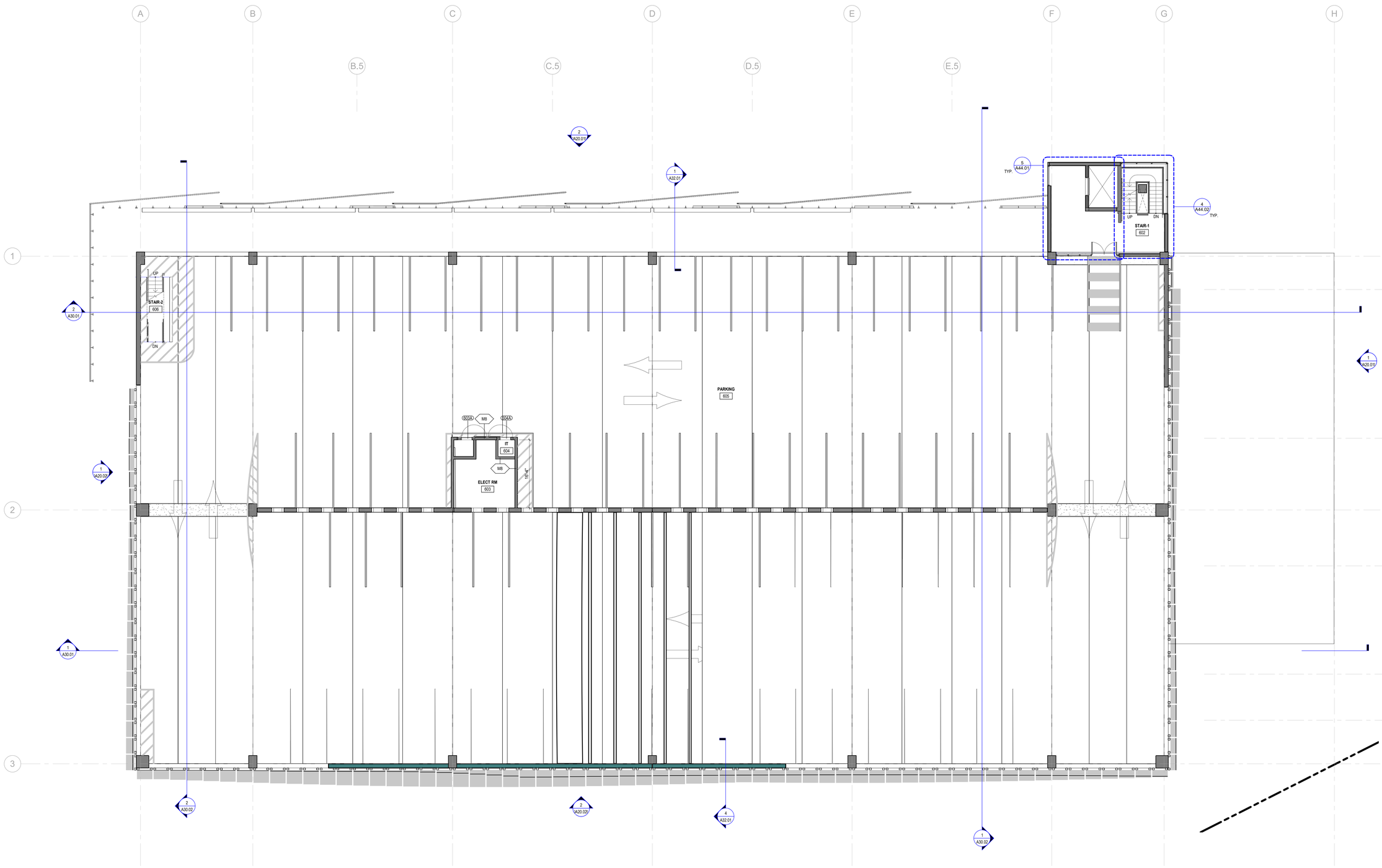

1 LEVEL 6 FLOOR PLAN
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Stamp

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Checked	BC
Date	31 JANUARY 2024
Scale	

Drawing Title
LEVEL-6 FLOOR PLAN

A10.06

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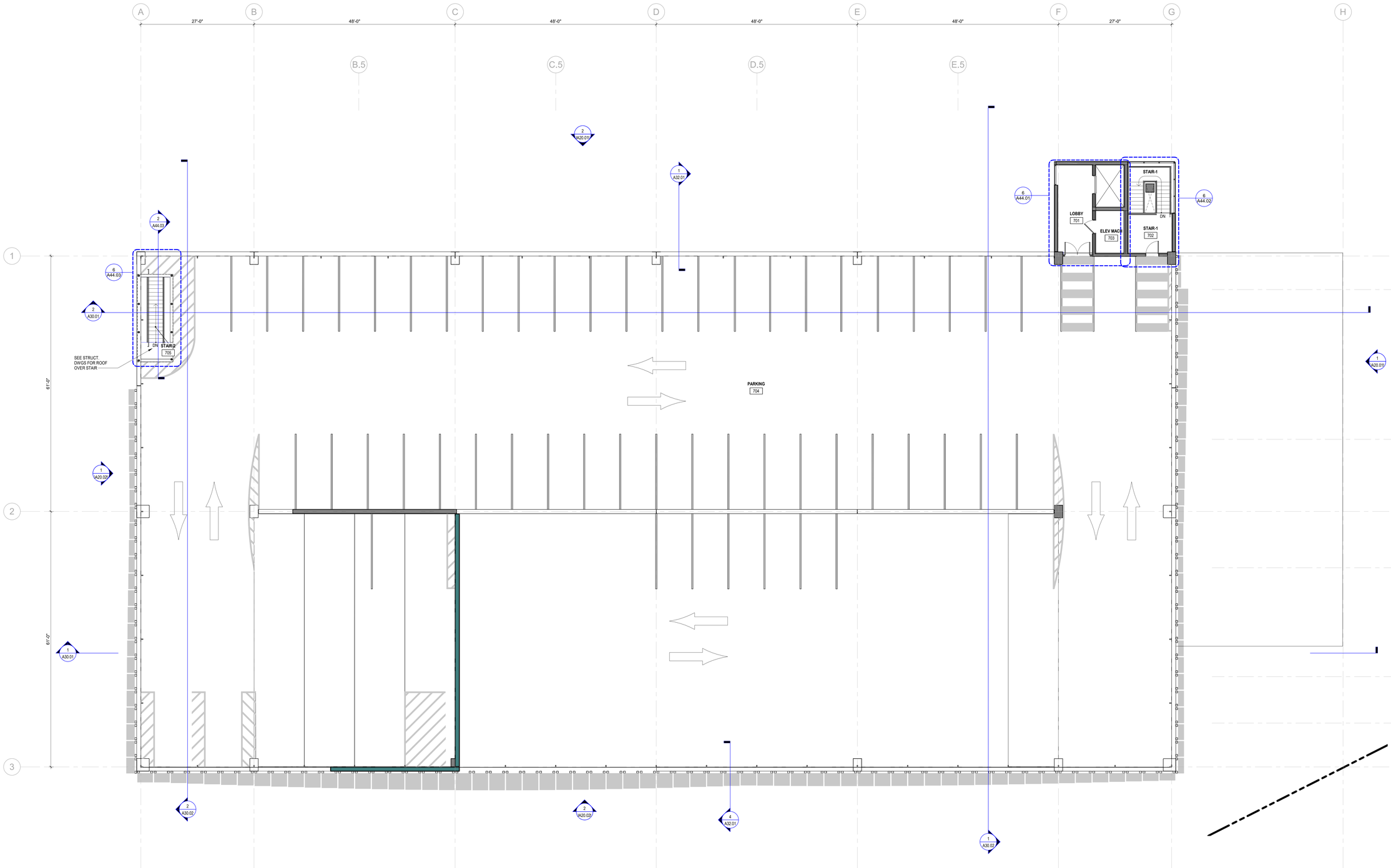

1 LEVEL 7 FLOOR PLAN
1/8" = 1'-0"

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Date	31 JANUARY 2024
Scale	
Drawing Title	LEVEL-7 FLOOR PLAN

A10.07

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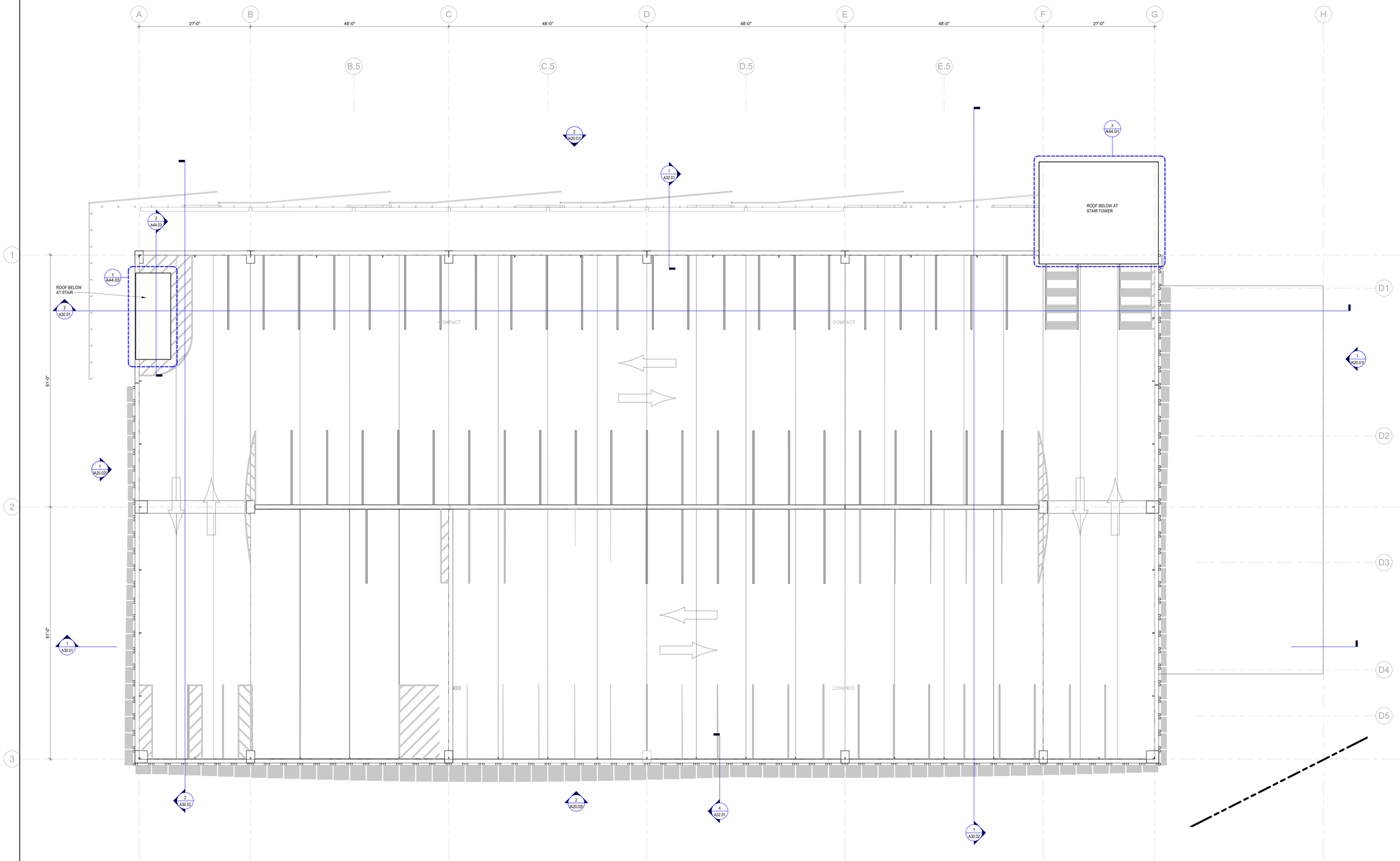

1 ROOF PLAN
1/8" = 1'-0"

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Drawn By	Author
Checked	Checker
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Scale	

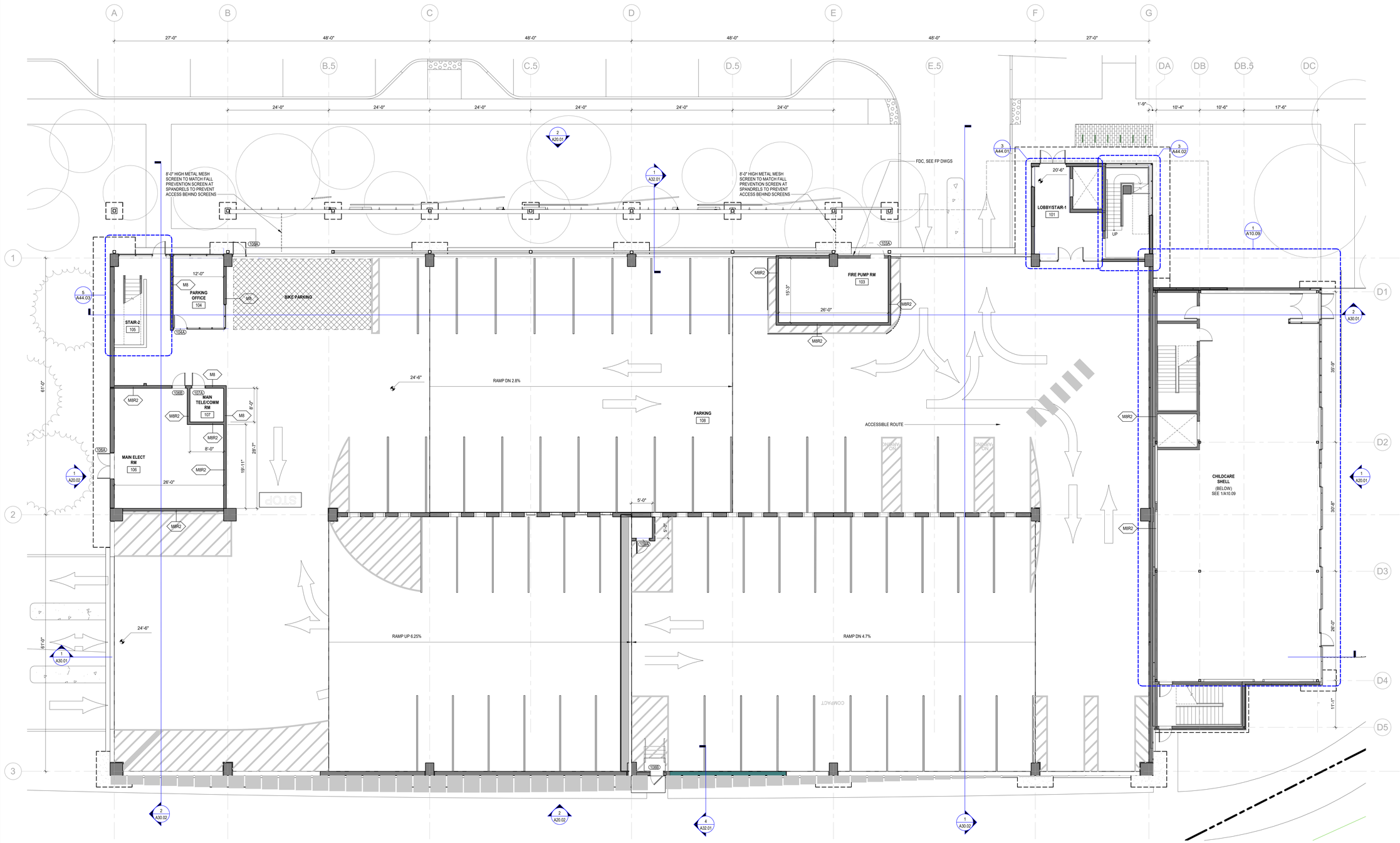
Drawing Title
ROOF PLAN

A10.08

2/1/2024 8:51:39 AM

GENERAL NOTES

1. ELECTRICAL - LIGHTING: INTERIOR BUILDING LIGHTING SHALL COMPLY WITH ANSI/ASHRAE/IES STANDARD 90.1-2022.
2. ELECTRICAL - POWER: RECEPTACLES WILL BE PROVIDED ADJACENT TO INTERIOR BIKE PARKING AS REQUIRED.



1 LEVEL 1 FLOOR PLAN
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LAND-USE PERMIT SET

Number	Revision	Date

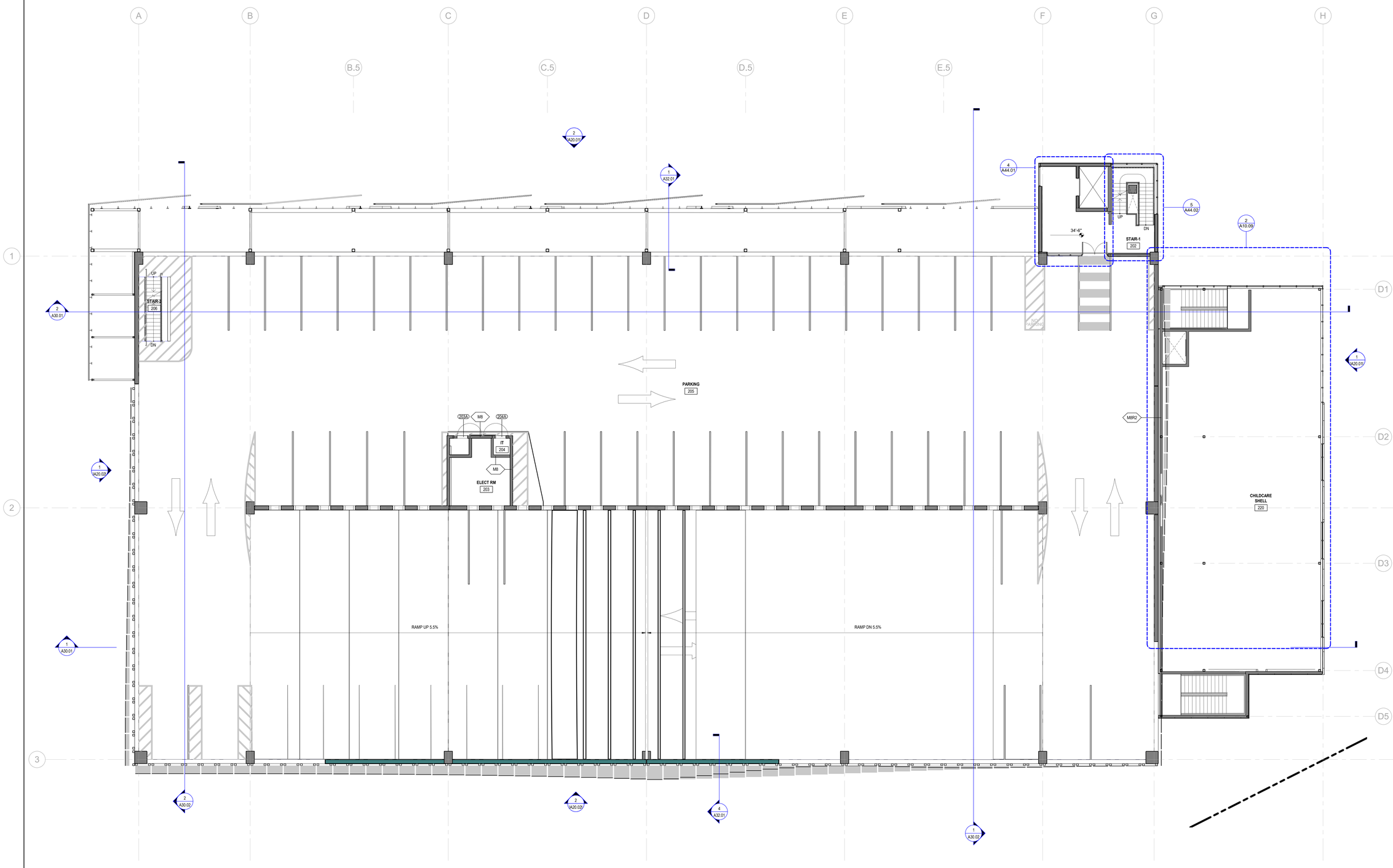
Stamp

Job #	2202
Project	THE ROUX INSTITUTE - GARAGE
Drawn By	MW
Checked	BC
Date	22 MARCH 2024
Scale	

Drawing Title
LEVEL-1 FLOOR PLAN

A10.01

3/22/2024 9:05:37 AM



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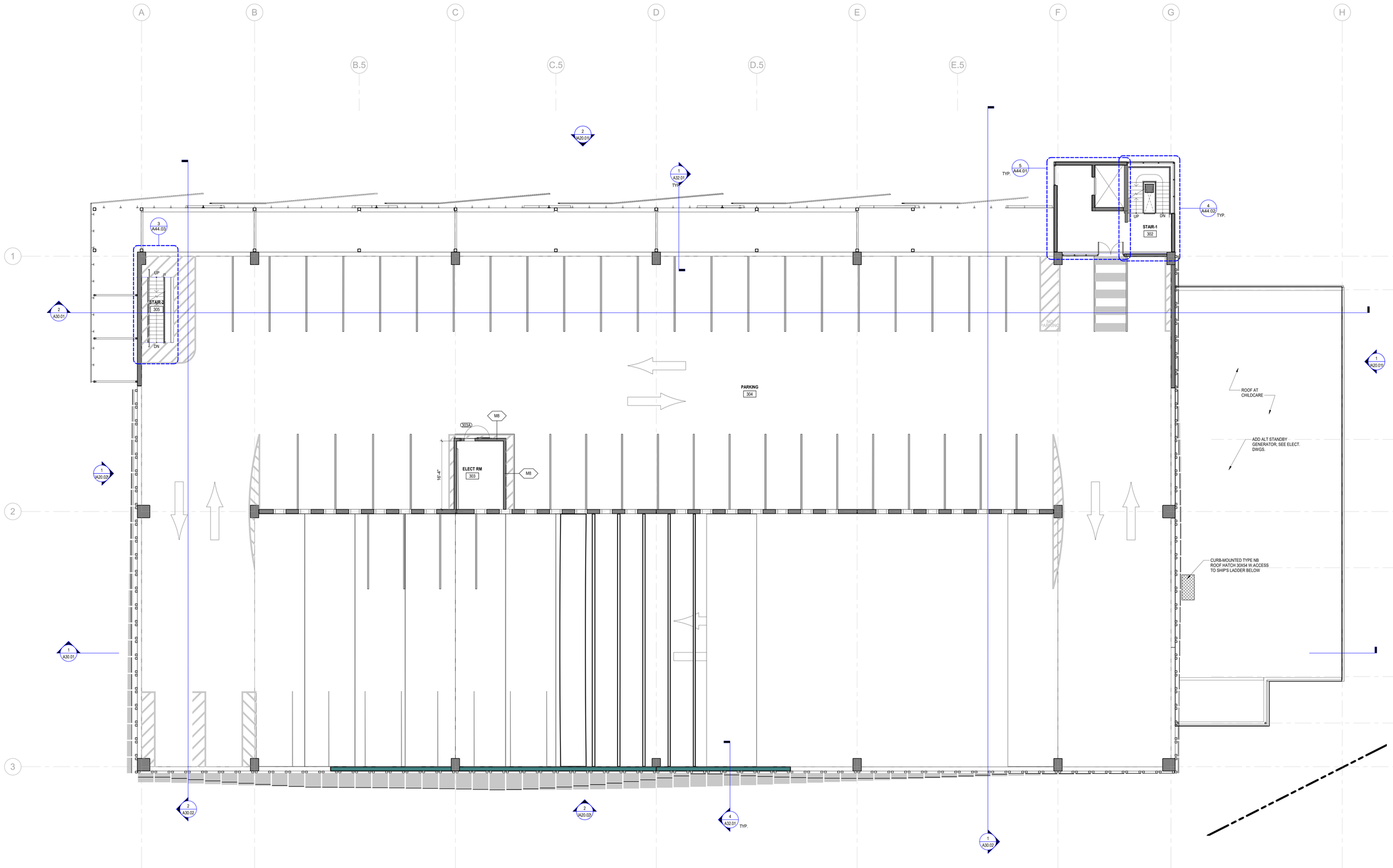
A10.02



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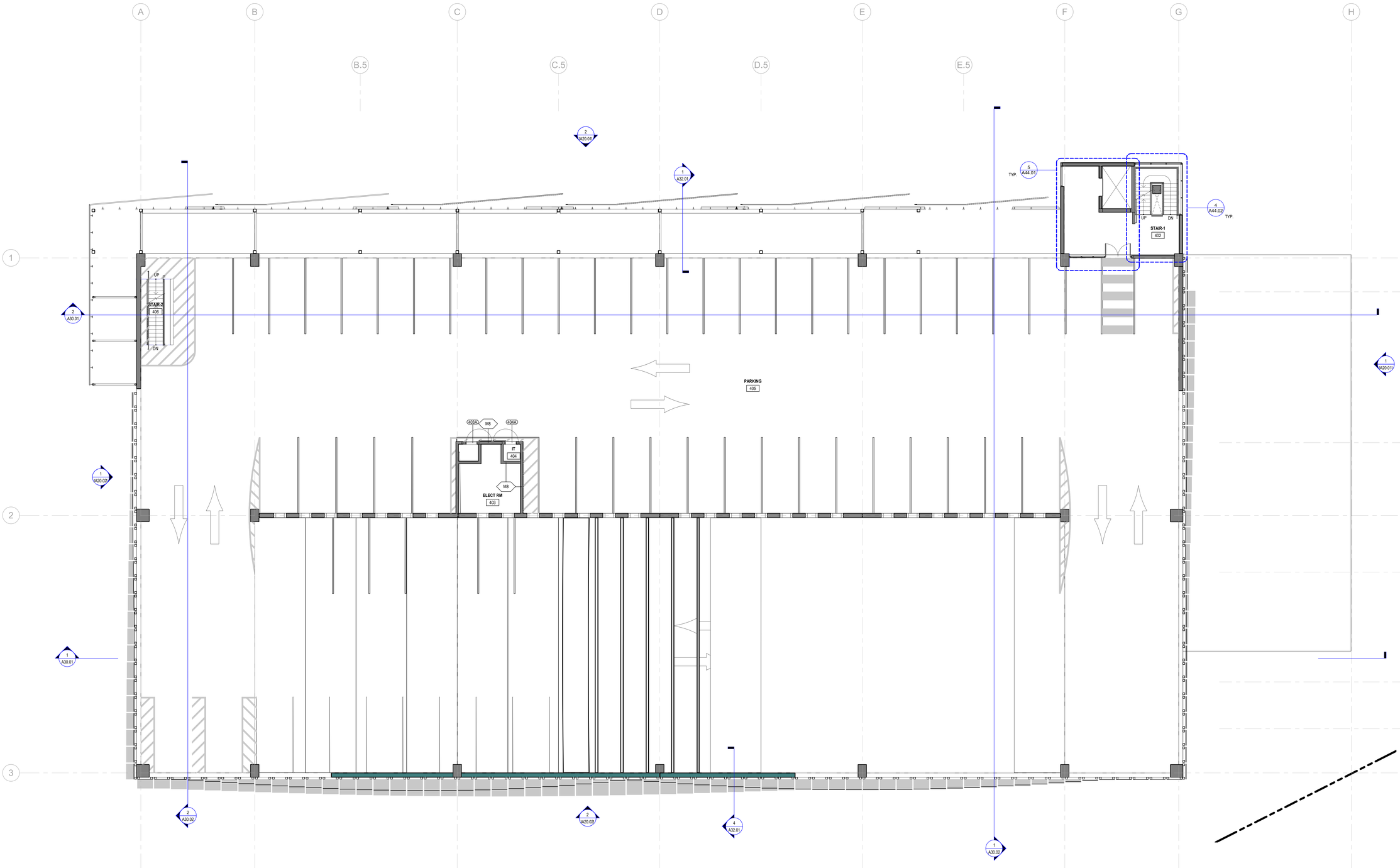

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LEVEL-4 FLOOR PLAN

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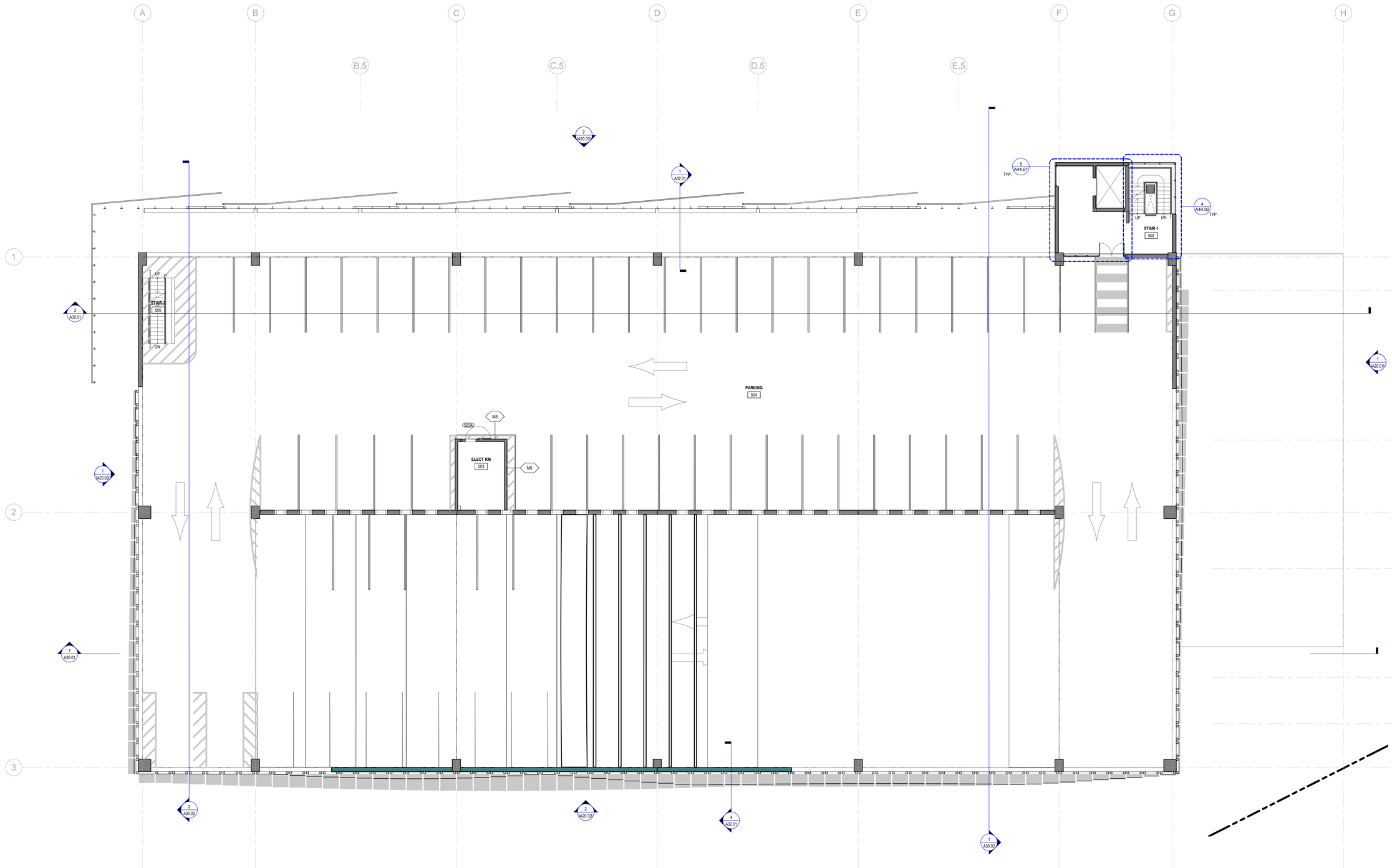

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LEVEL-5 FLOOR PLAN

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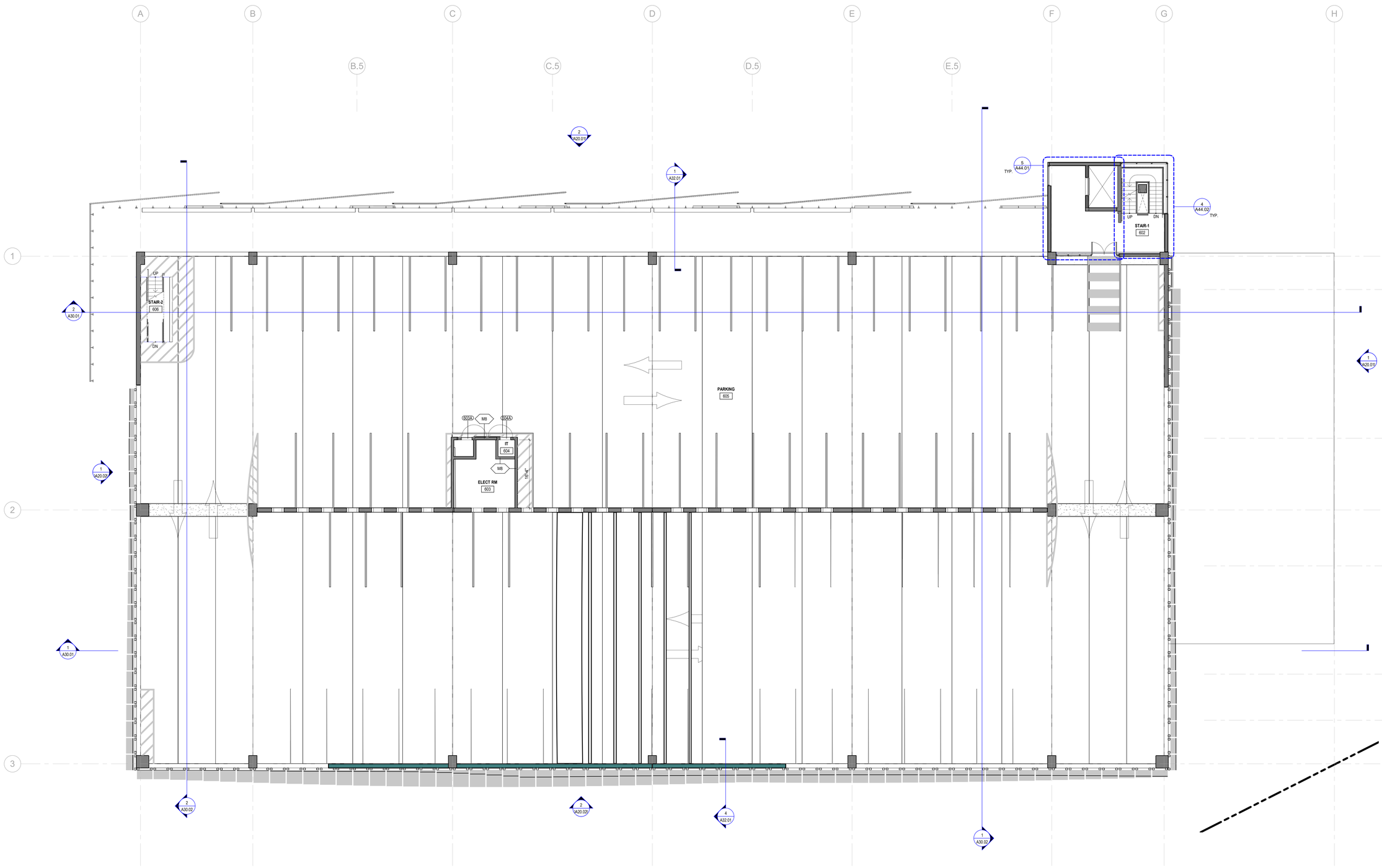

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LEVEL-6 FLOOR PLAN

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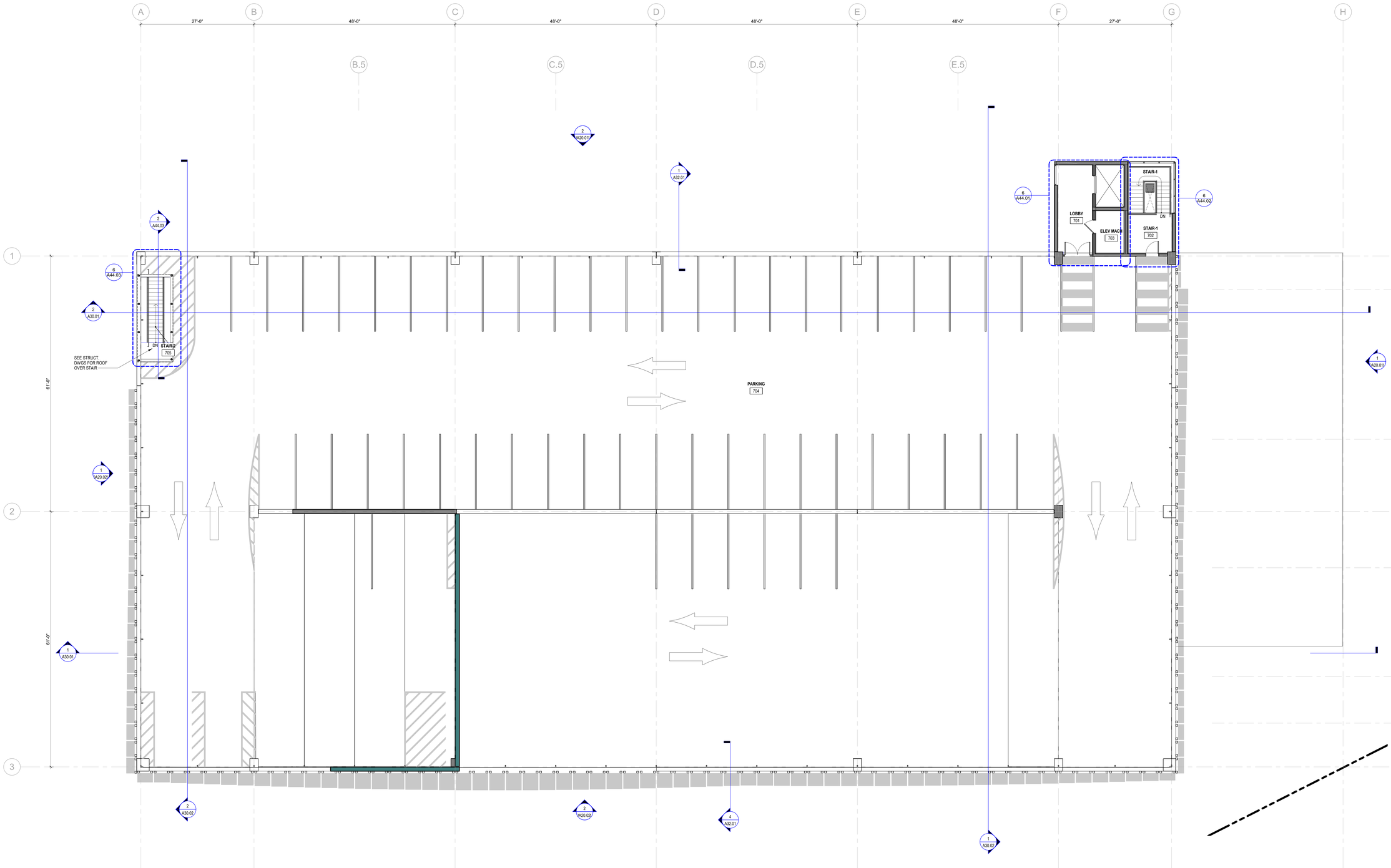

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Scale	
Drawing Title	LEVEL-7 FLOOR PLAN

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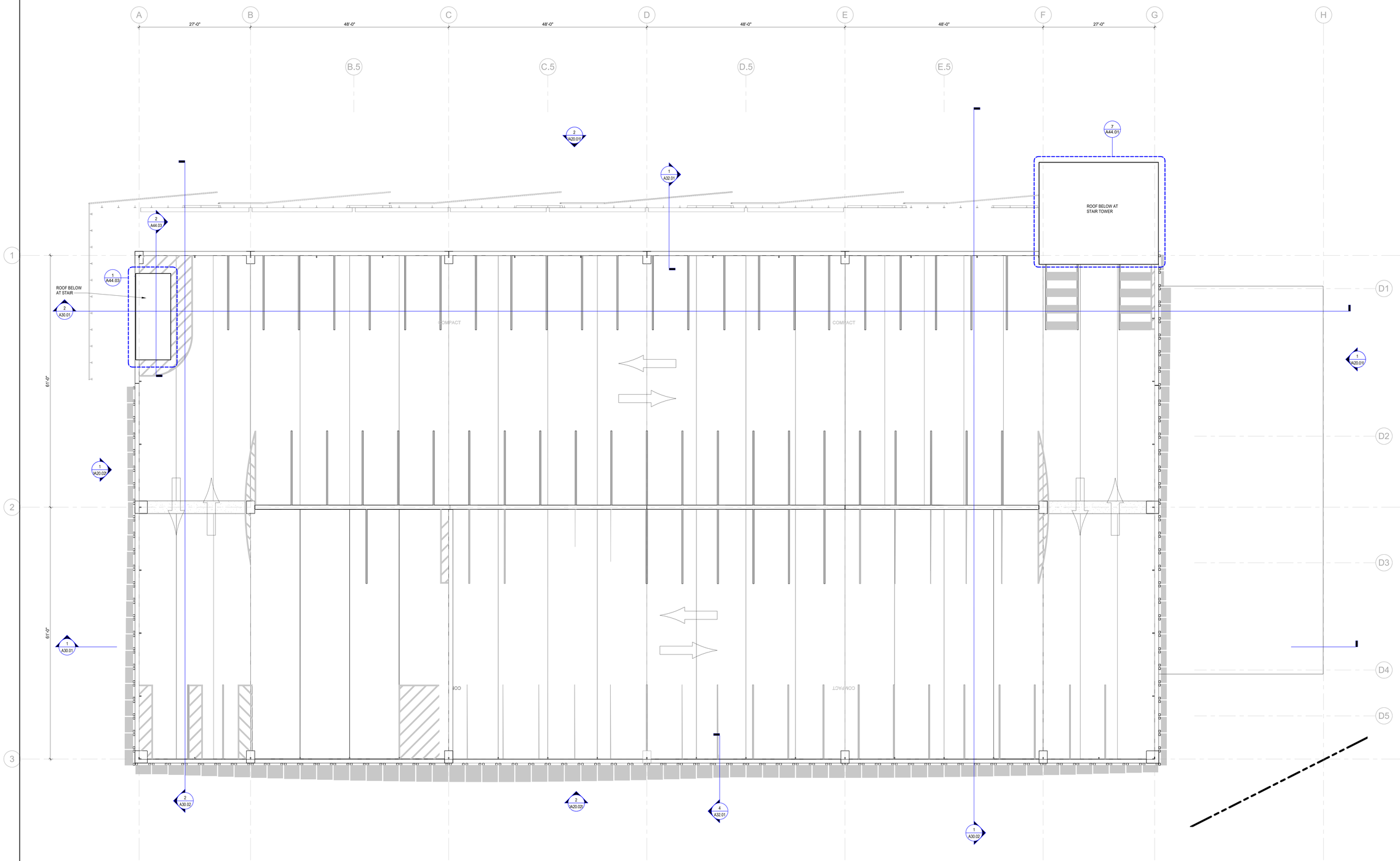

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Checked	Checker
Date	31 JANUARY 2024
Scale	

Drawing Title
ROOF PLAN

A10.08

2/1/2024 8:51:39 AM

GENERAL NOTES

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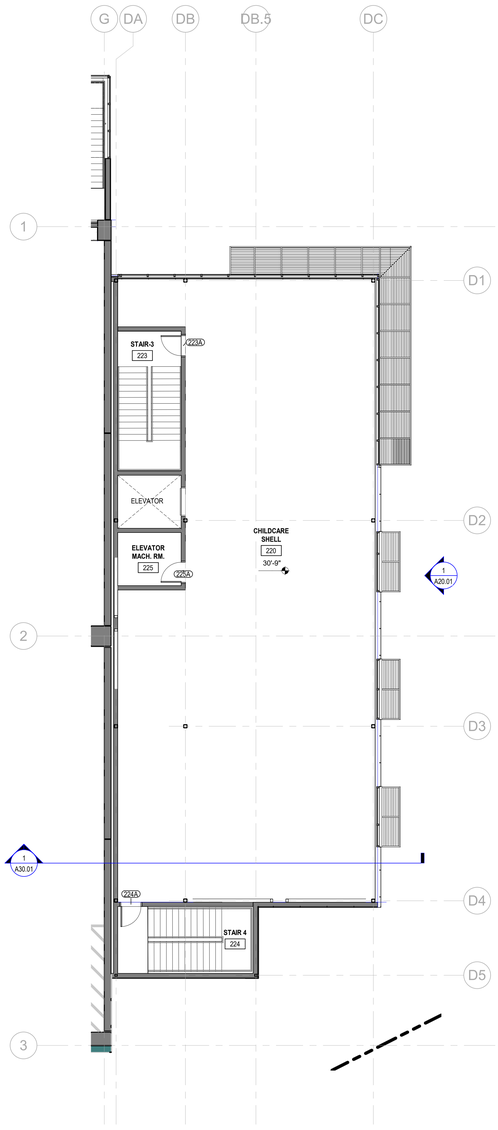
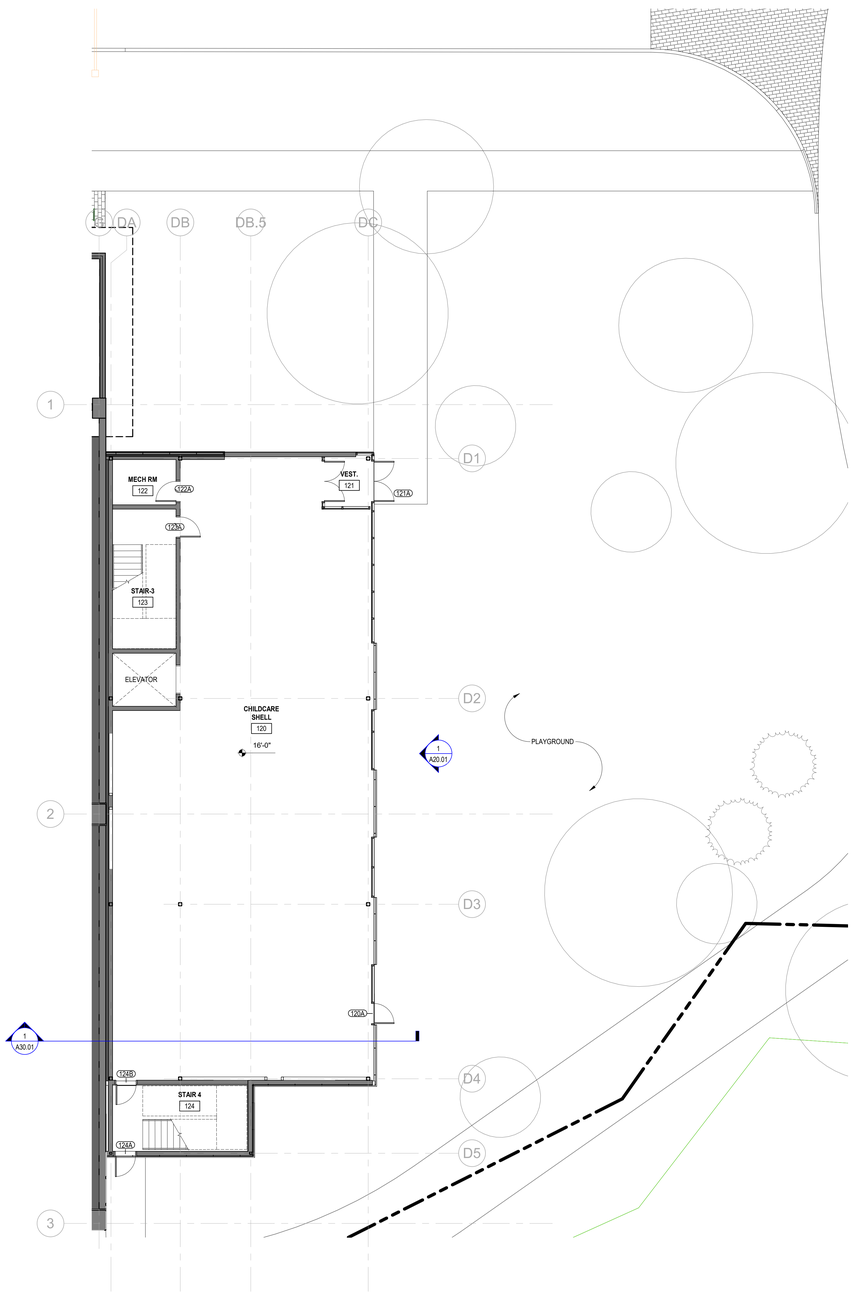


2 CHILDCARE - LEVEL 2 FLOOR PLAN
1/8" = 1'-0"



1 CHILDCARE - LEVEL 1 FLOOR PLAN
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LAND-USE PERMIT SET

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Date	22 MARCH 2024
Scale	

Drawing Title
CHILDCARE FLOOR PLANS

A10.09

3/22/2024 9:06:23 AM

50% SUBMISSION
NOT FOR CONSTRUCTION
11/1/2023

IDEALS - ROUX CAMPUS

PORTLAND

CUMBERLAND COUNTY

SHERWOOD STREET

PROJECT LENGTH: 0.09 MILES

PERMIT REVIEW
NOT FOR CONSTRUCTION

PLANS PREPARED BY:

vhb

500 Southborough Drive, Suite 105B
South Portland, Maine 04106

PLAN LEGEND

Town, County, State		Catch Basins	Existing ■ Proposed
Property Lines		Manholes	Existing ● Proposed
R/W Lines-Existing		Proposed Underdrain	
R/W Lines-Proposed		Proposed Ditch	
Culvert-Existing		Existing Ditch	
Culvert Proposed		Utility Poles	Existing ♦ Proposed
Curbing	Existing Proposed	Fire Hydrants	Existing ◈ Proposed
Type 1		Existing Water Line	
Type 3		Existing San. Sewer	
Type 5		Existing San. Sewer Manhole	
Outline of Bodies of Water		Guardrail-Existing	
Exposed Bedrock		Guardrail-Proposed	
Buildings		Guardrail-Cable, Other	
Trees	Conifer Deciduous	Centerline-Existing	
Tree Line		Centerline-Proposed	10+00
Clearing Limit Line		Travelway-Existing	
Railroad		Travelway-Proposed	

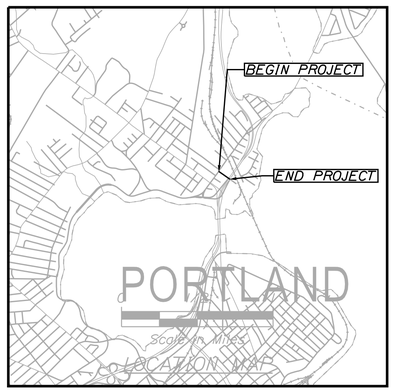
Boring HB-XXX-###

Pavement Core PC-#

Test Pit TP-XXX-###

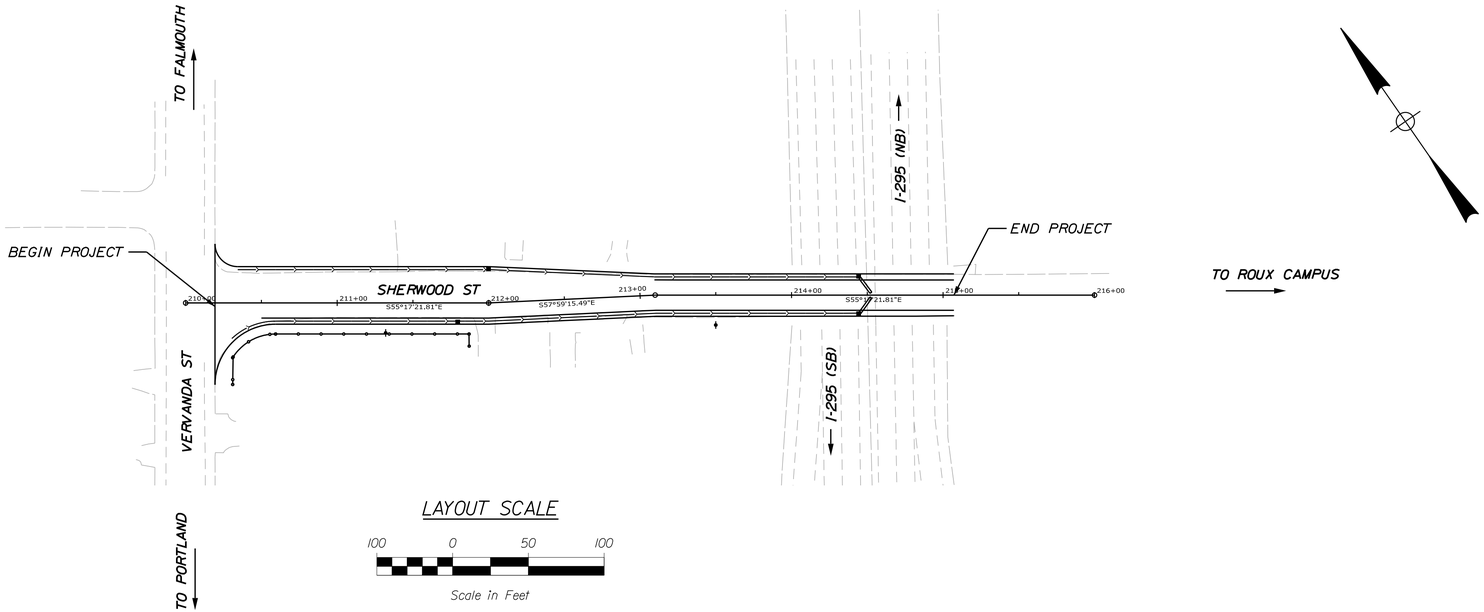
Probe P-#.#X

#.# = Depth
X = W (Weathered Rock)
R (Refusal)
NR (No Refusal)



0 1/2 1
Scale in Miles

LOCATION MAP



LAYOUT SCALE

100 0 50 100
Scale in Feet

INDEX OF SHEETS

Description	Sheet No.
Title Sheet	1
Typical Sections	2
Plans	3
Profiles	4
Cross Sections	5-16

TRAFFIC DATA — SHERWOOD ST

Current (2023) AADT	XXX
Future (2043) AADT	XXX
DHV - % of AADT	XX%
Design Hour Volume	XXXX
% Heavy Trucks (AADT)	X%
Directional Distribution (DHV)	XX%
Design Speed (mph)	XX
Functional Class:	Major Collector
Corridor Priority	3

PROJECT LOCATION:	FROM THE INTERSECTION OF SHERWOOD STREET AND VERNANDA STREET RUNNING SOUTHEAST 0.09 MILES TO JUST PAST THE I-295 UNDERPASS.
PROGRAM AREA:	HIGHWAY PROGRAM
SCOPE OF WORK:	ROADWAY RECONSTRUCTION WITH INTERSECTION AND PEDESTRIAN IMPROVEMENTS

IDEALS

APPROVED — DATE

COMMISSIONER:

CHIEF ENGINEER:

STATE OF MAINE ★ ETHAN C. FLYNN 13436 ★ LICENSED PROFESSIONAL ENGINEER

Ethan C. Flynn — SIGNATURE

13436 — P.E. NUMBER

11-01-2023 — DATE

PROJECT INFORMATION

PROGRAM	HIGHWAY
PROJECT MANAGER	J. CONLEY
DESIGNER	J.DAVIS
CONSULTANT	VHB
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

PORTLAND
SHERWOOD STREET

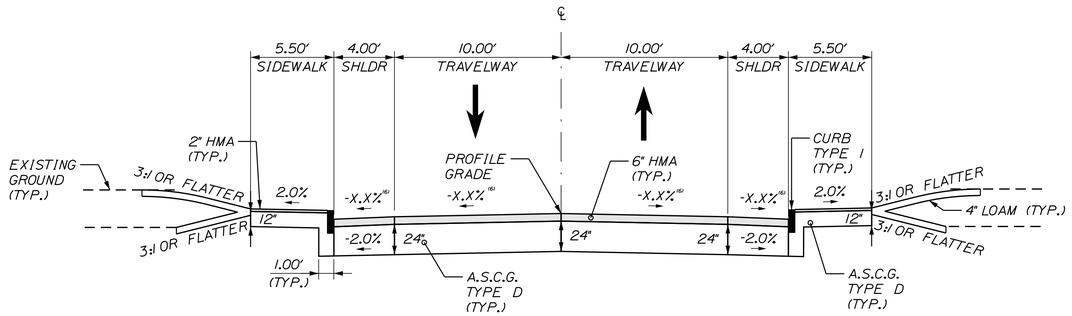
TITLE SHEET

SHEET NUMBER
1
OF 16

Filename: ...\ls\Sherwood_St\001_Title.dgn Division: HIGHWAY Username: EFlynn Date:11/1/2023

TYPICAL SECTIONS
Sherwood St

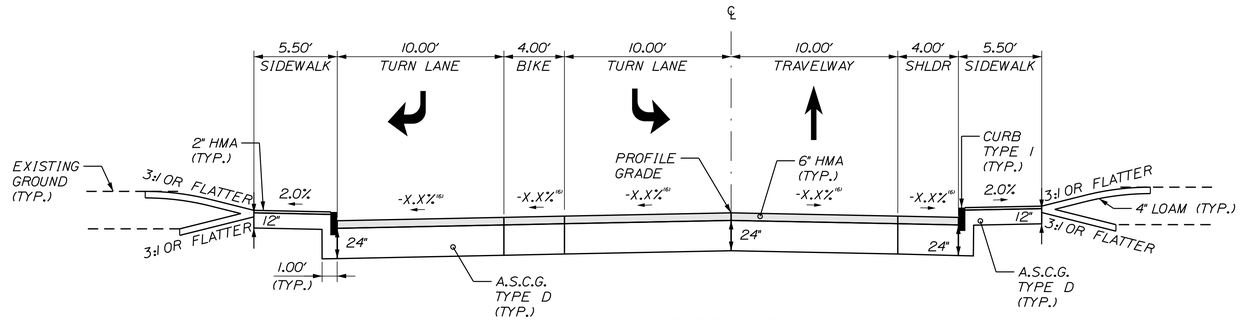
SHERWOOD STREET SUPERELEVATION TABLE					
LEFT SHLDR (%)	TURN LANE (%)	TRAVEL LANE (%)	STATION	TRAVEL LANE %	RIGHT SHLDR (%)
			START		
-	0.6%	0.6%	**210+19.34**	-0.7%	-0.7%
-	0.3%	0.3%	**210+25.00**	-0.8%	-0.8%
-	-0.8%	-0.8%	**210+50.00**	-1.4%	-1.4%
-	-2.0%	-2.0%	**210+75.00**	-2.0%	-2.0%
			TO		
-	-2.0%	-2.0%	**211+50.00**	-2.0%	-2.0%
-	-2.3%	-2.3%	**211+75.00**	-1.5%	-1.5%
			TO		
-2.3%	-	-2.3%	**213+00.00**	-1.5%	-1.5%
-2.1%	-	-2.1%	**213+25.00**	-1.8%	-1.8%
-2.0%	-	-2.0%	**213+50.00**	-2.0%	-2.0%
			TO		
-2.0%	-	-2.0%	**215+00.00**	-2.0%	-2.0%
MATCH	-	MATCH	**215+07.17**	MATCH	MATCH
			END		



NORMAL

LEFT SIDEWALK	(2) 11' WIDE LANES & (2) 4' BIKE LANES	RIGHT SIDEWALK
STATION TO STATION	STATION TO STATION	STATION TO STATION
213+10.00 TO 215+07.17	213+10.00 TO 215+07.17	213+10.00 TO 215+07.17

NOTE: BRIDGE UNDERPASS STA. 213+98.00 TO 215+07.35



NORMAL

LEFT SIDEWALK	(3) 11' WIDE LANES & (2) 4' BIKE LANES	RIGHT SIDEWALK
STATION TO STATION	STATION TO STATION	STATION TO STATION
210+19.34 TO 212+00.00	210+19.34 TO 212+00.00	210+19.34 TO 212+00.00

NOTES:

1. THE PAVEMENT AND BASE DEPTHS AS SHOWN ON THE PLANS ARE INTENDED TO BE NOMINAL.
2. CROWNS FOR BOTH NORMAL AND SUPERELEVATION SECTIONS FOR ALL COURSES OF SUBBASE AND PAVEMENT SHALL BE STRAIGHT.
3. THE ALGEBRAIC DIFFERENCE BETWEEN THE SHOULDER AND TRAVELWAY CROSS SLOPES 'ROLLOVER' SHALL NOT EXCEED 8%.
4. THE STATIONING SHOWN UNDER EACH TYPICAL IS APPROXIMATE.
5. 4" OF LOAM SHALL BE USED IN ALL LAWN AREAS.
6. SEE SUPERELEVATION TABLE FOR CROSS SLOPES

NOT TO SCALE

IDEALS

HIGHWAY PLANS

vhb

	BY	DATE
PROJ. MANAGER	JENN CONLEY	
DESIGN-DETAILED	JBD	09/2023
CHECKED-REVIEWED	EOF	09/2023
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

IDEALS - PORTLAND
SHERWOOD STREET

TYPICALS

SHEET NUMBER

2

OF 16

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:9/15/2023

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:9/15/2023

CURVE DATA #1
PI = 212+00.00
Δ = 2°41'53.7" Lt.

POB = STA. 210+00.00

STA. 210+19.34
BEGIN FULL CONSTRUCTION
MATCH EXISTING
LIMIT OF WORK

INSTALL CB
TYPE A1-C

MATCH EXISTING
PAVED PATH

MATCH EXISTING WALL

REDUCE SIDWALK WIDTH TO
MATCH EXISTING STEPS

EXTEND SIDEWALK TO
MATCH EXISTING WALL

MATCH EXISTING STEPS

PI = STA. 212+00.00

SB I-295

NB I-295

STA. 215+07.17
END FULL CONSTRUCTION
MATCH EXISTING
LIMIT OF WORK

EXISTING
BRIDGE
DECK

INSTALL CB
TYPE A1-C

POE = STA. 216+00.00

5.5'

5.8'

5.8'

6" UD

12" UD

12" UD

10'

10'

10'

10'

10'

10'

210+00

211+00

212+00

213+00

214+00

215+00

216+00

S55°17'21.81"E

S57°59'15.49"E

S55°17'21.81"E

SHERWOOD STREET

VERANDA STREET

5.5'

6.0'

6.0'

RELOCATE POLE

INSTALL CB
TYPE A1-C

MATCH EXISTING STEPS

RELOCATE POLE

INSTALL (2) 12" X 16 FT
RCP

INSTALL CB
TYPE A1-C

EXTEND SIDEWALK TO
MATCH EXISTING WALL

PI = STA. 213+10.00

CURVE DATA #1
PI = 213+10.00
Δ = 2°41'53.7" Rt.

THIS APPEARS TO
BE A PAVED PATH
DISCUSS IF WE
NEED CURB CUT?

EXTEND SIDEWALK TO
MATCH EXISTING WALL

PLAN

25 0 25 50
Scale of Feet

IDEALS

HIGHWAY PLANS

vhb

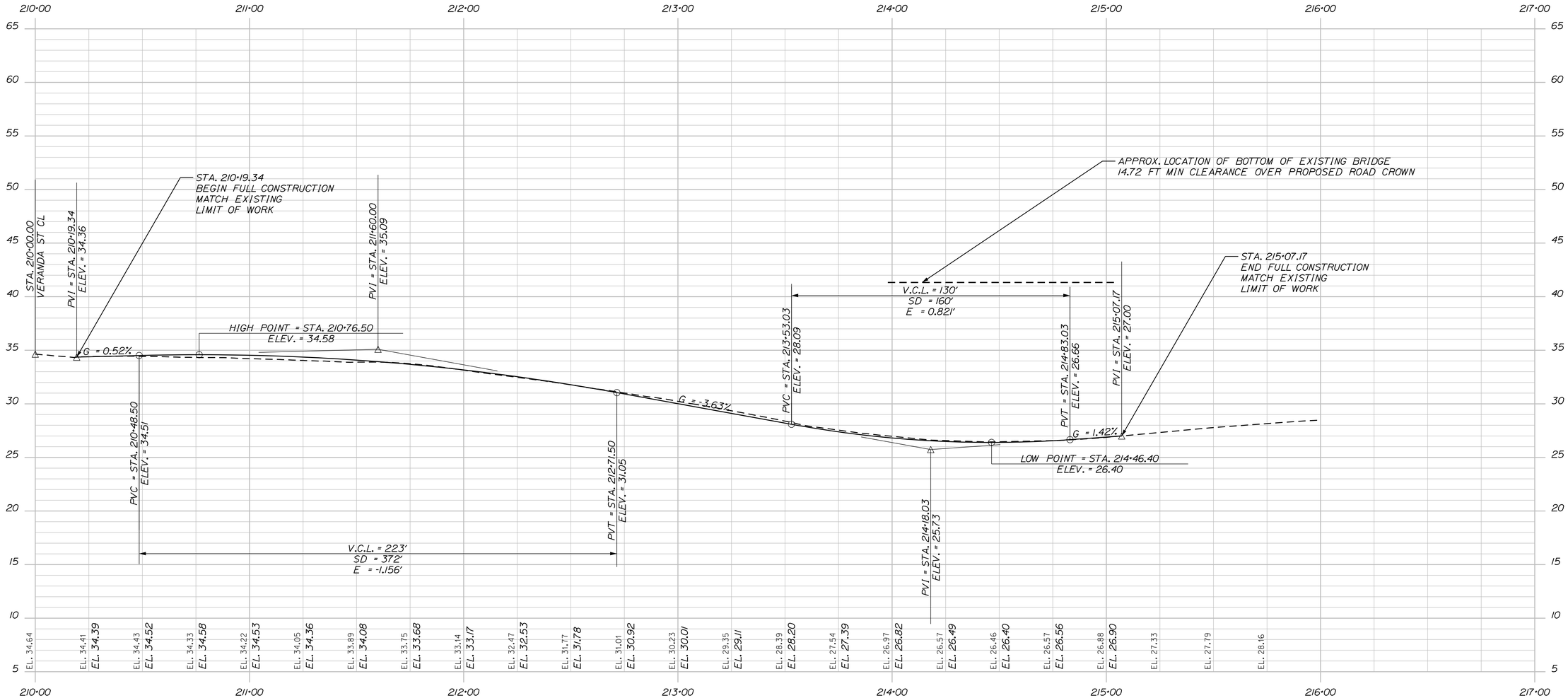
	DATE	BY
JENN CONLEY	09/2023	AHS
JBD	09/2023	JC
ECF		
PROJ. MANAGER		
DESIGN-DETAILED		
CHECKED-REVIEWED		
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

IDEALS - PORTLAND
SHERWOOD STREET

PLAN

SHEET NUMBER
3
OF 16

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:9/15/2023



PROFILE

Horiz. 25 0 25 50

Vert. 5 0 5 10

Scale of Feet

IDEALS

HIGHWAY PLANS

vhb

	BY	DATE
PROJ. MANAGER	JENN CONLEY	
DESIGN-DETAILED	JBD	AHS 09/2023
CHECKED-REVIEWED	ECF	JC 09/2023
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

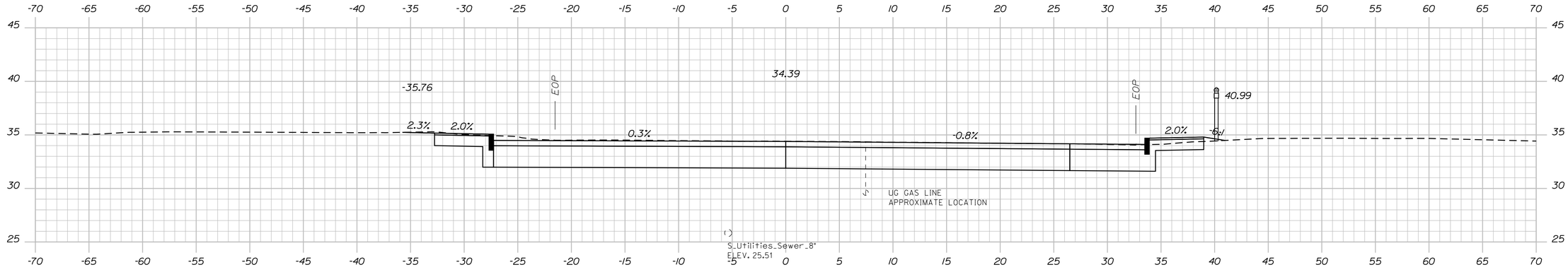
IDEALS - PORTLAND
SHERWOOD STREET

PROFILE

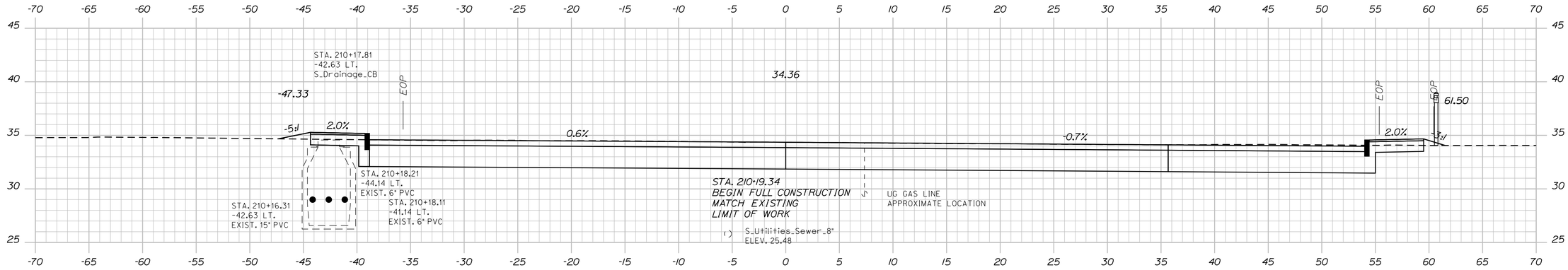
SHEET NUMBER

4

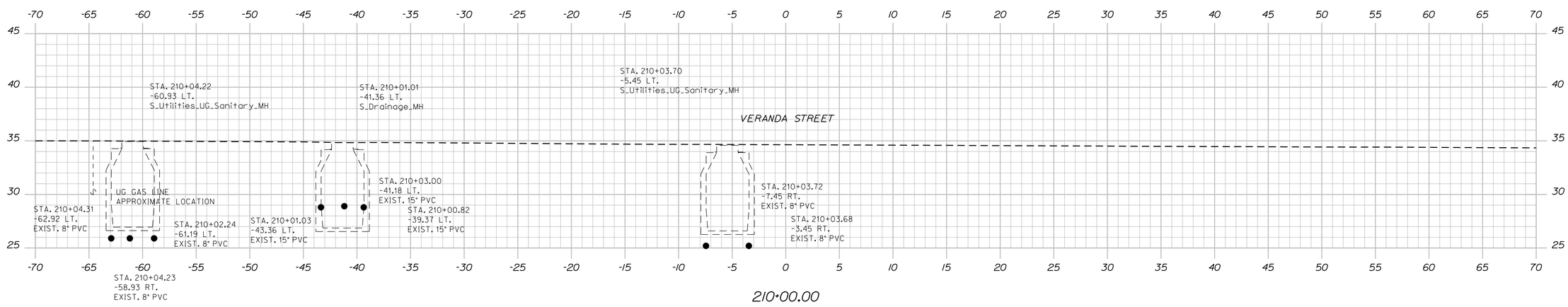
OF 16



210+25.00



210+19.34



210+00.00

IDEALS

HIGHWAY PLANS

vhb

PROJ. MANAGER	JENN CONLEY
DESIGN-DETAILED	JBD
CHECKED-REVIEWED	ECF
DESIGN2-DETAILED2	
DESIGN3-DETAILED3	

BY	DATE
AHS	09/2023
JC	09/2023
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

IDEALS - PORTLAND
SHERWOOD STREET
CROSS-SECTIONS
(1 OF 12)

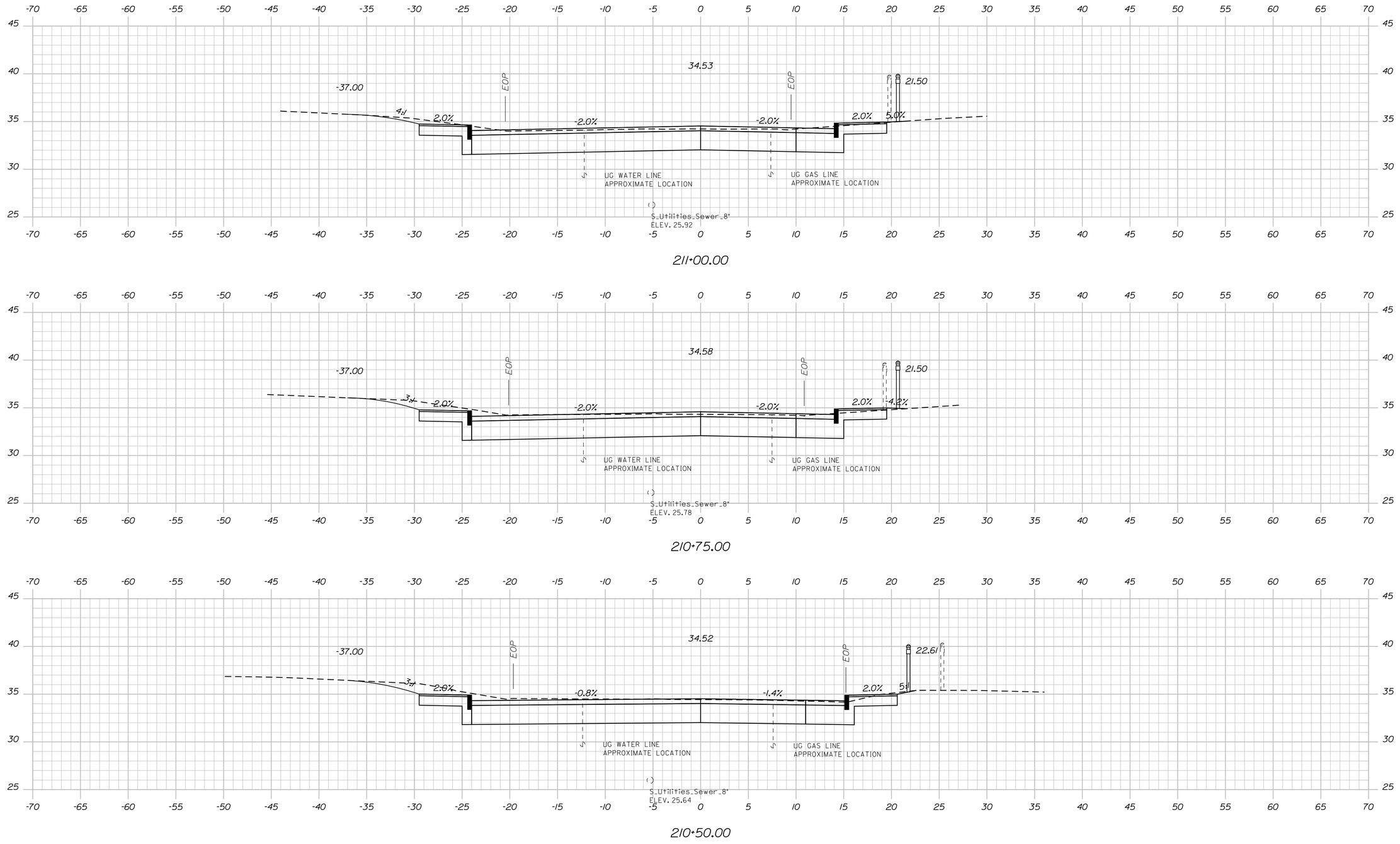
SHEET NUMBER

5

OF 16

Sta. 210+00.00 to Sta. 210+25.00

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:9/15/2023



IDEALS

HIGHWAY PLANS

vhb

PROJ. MANAGER	JENN CONLEY	
DESIGN-DETAILED	JBD	09/2023
CHECKED-REVIEWED	ECF	09/2023
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

IDEALS - PORTLAND SHERWOOD STREET

CROSS-SECTIONS (2 OF 12)

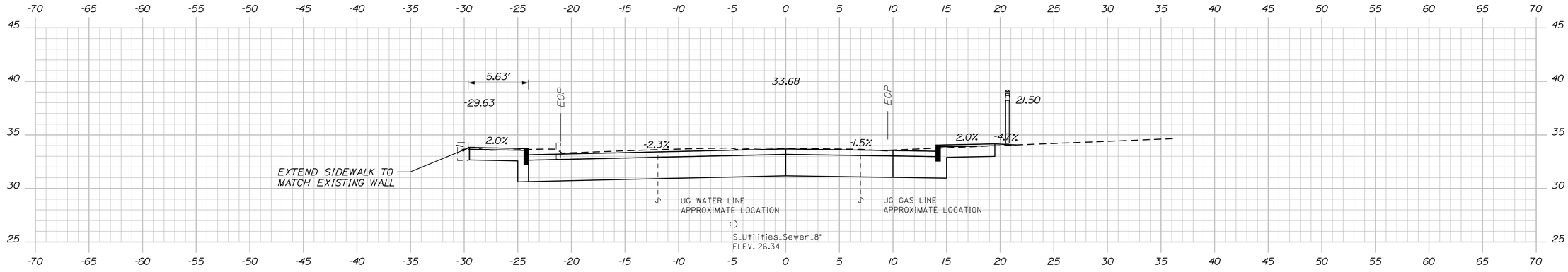
SHEET NUMBER

6

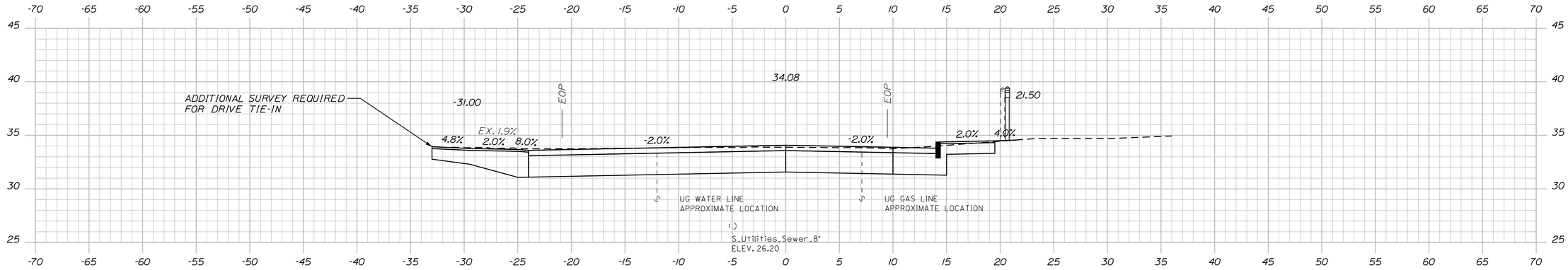
OF 16

Sta. 210+50.00 to Sta. 211+00.00

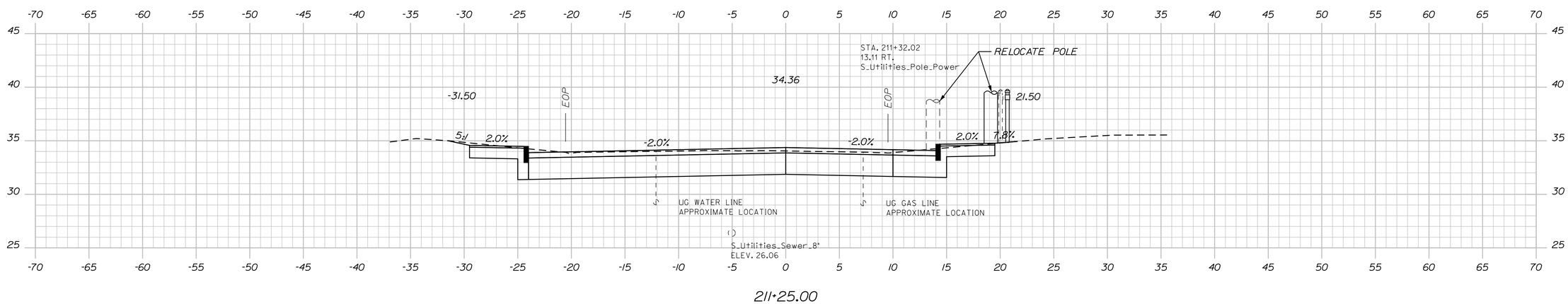
Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:9/15/2023



211+75.00



211+50.00



211+25.00

IDEALS

HIGHWAY PLANS

vhb

PROJ. MANAGER	JENN CONLEY	
DESIGN-DETAILED	JBD	09/2023
CHECKED-REVIEWED	EOF	
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

BY	AHS	09/2023
	JC	

IDEALS - PORTLAND
SHERWOOD STREET
CROSS-SECTIONS
(3 OF 12)

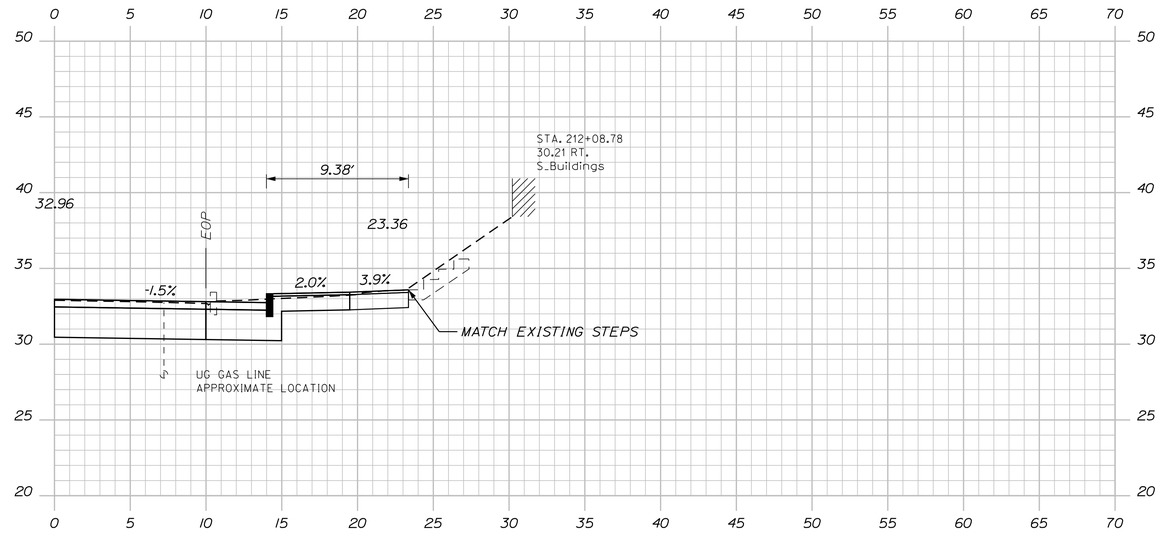
SHEET NUMBER

7

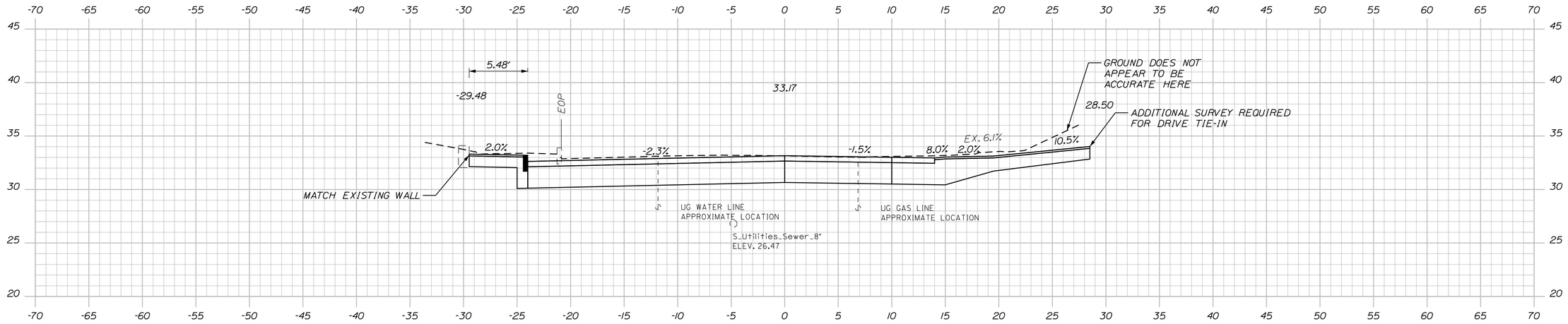
OF 16

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:9/15/2023

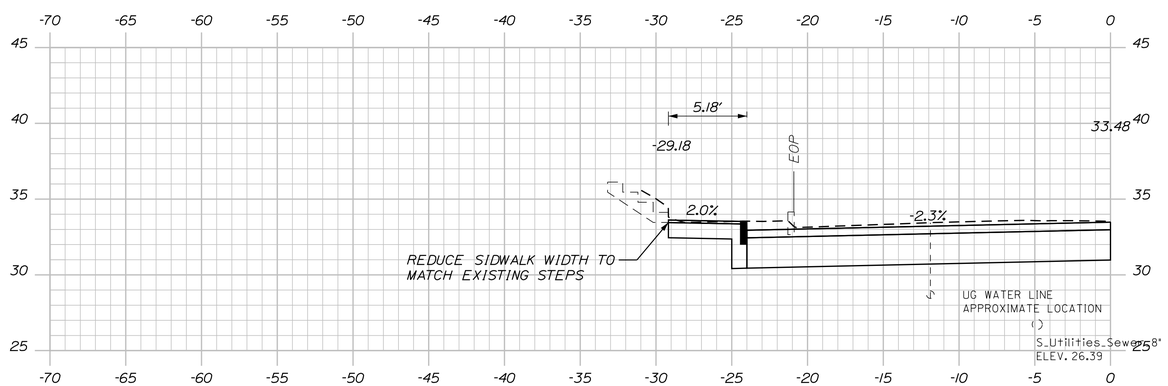
Sta. 211+25.00 to Sta. 211+75.00



212+08.78



212+00.00



211+85.47

IDEALS

HIGHWAY PLANS

PROJ. MANAGER	JENN CONLEY
DESIGN-DETAILED	JBD
CHECKED-REVIEWED	ECF
DESIGN2-DETAILED2	
DESIGN3-DETAILED3	

	DATE	BY
REVISIONS 1	09/2023	AHS
REVISIONS 2	09/2023	JC
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

IDEALS - PORTLAND
SHERWOOD STREET
CROSS-SECTIONS
(4 OF 12)

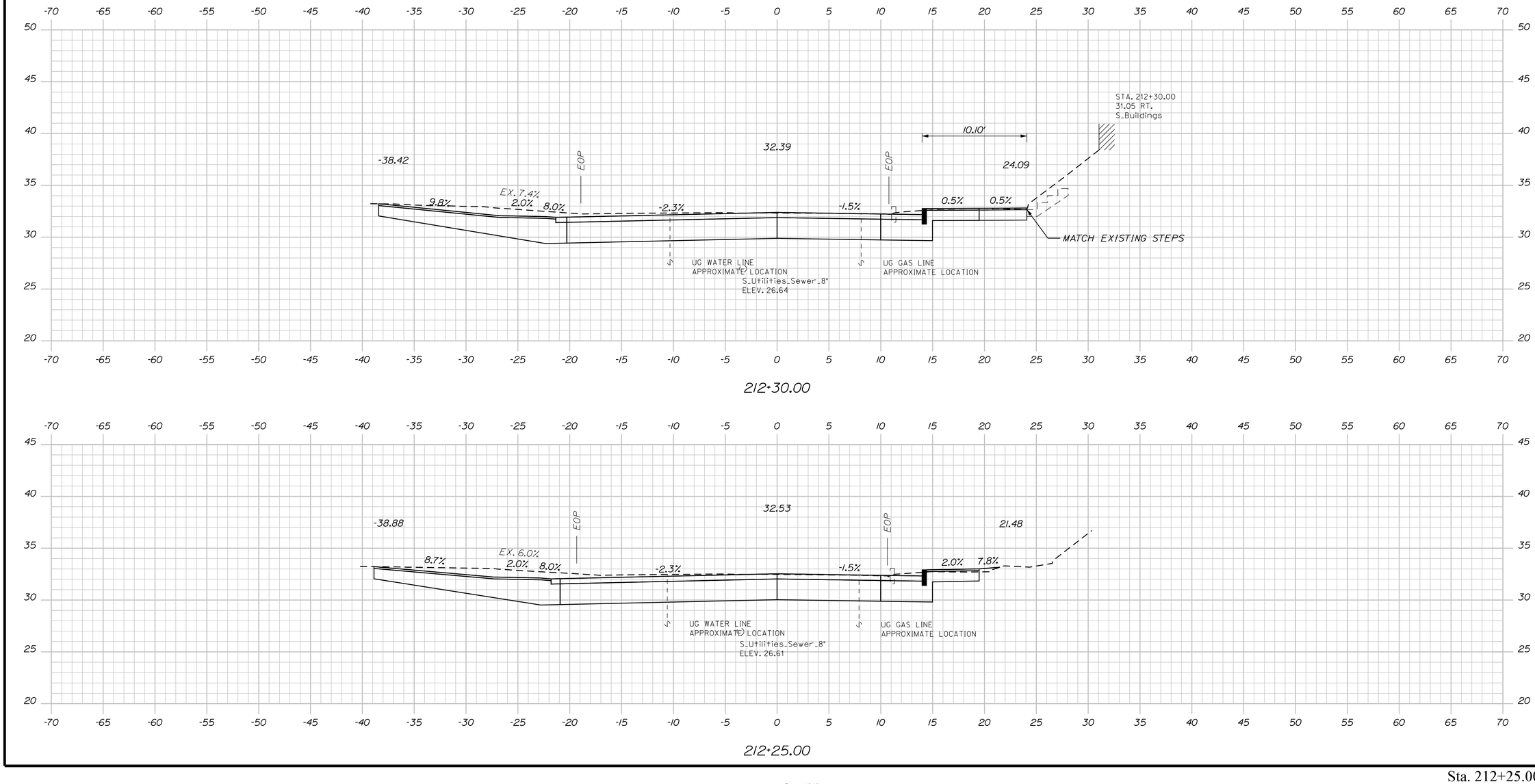
SHEET NUMBER

8

OF 16

Sta. 211+85.47 to Sta. 212+08.78

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:9/15/2023



IDEALS

HIGHWAY PLANS

vhb

PROJ. MANAGER	JENN CONLEY		DATE
DESIGN-DETAILED	JBD	AHS	09/2023
CHECKED-REVIEWED	ECF	JC	09/2023
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

IDEALS - PORTLAND
SHERWOOD STREET

CROSS-SECTIONS
(5 OF 12)

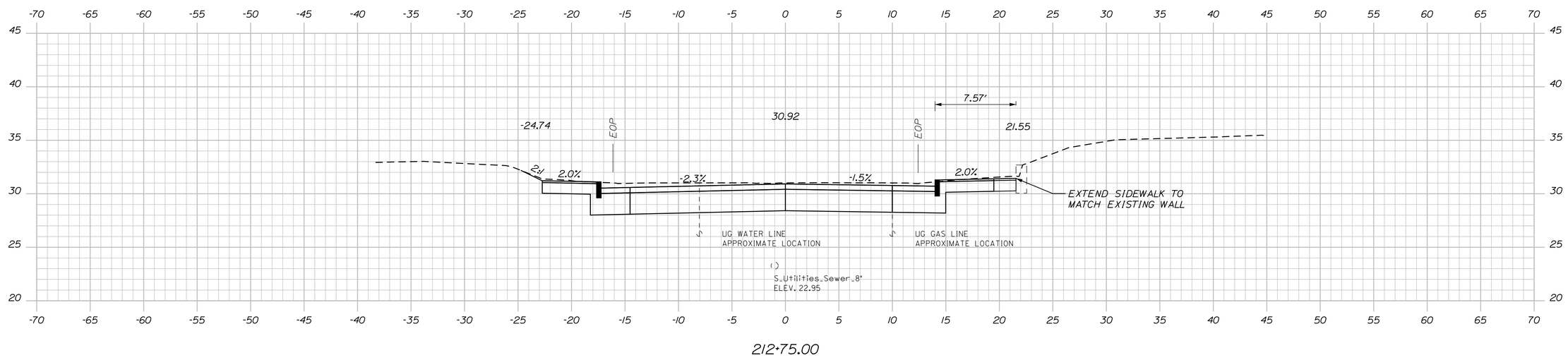
SHEET NUMBER

9

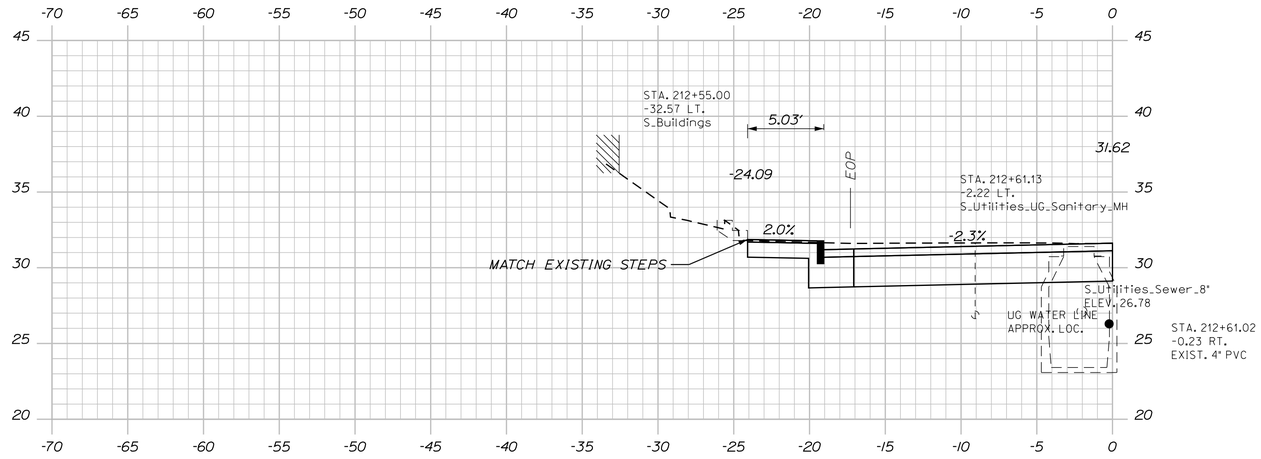
OF 16

Sta. 212+25.00 to Sta. 212+30.00

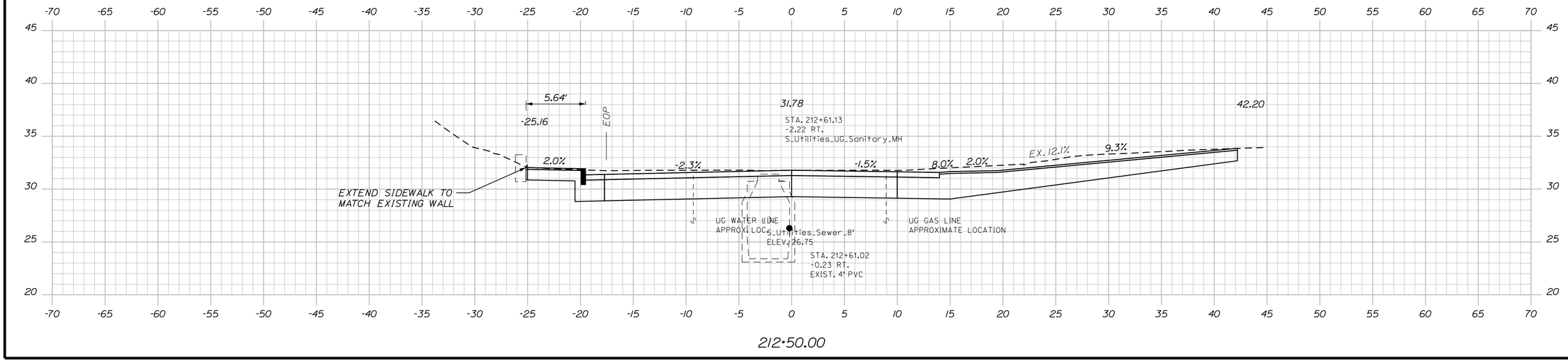
Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:9/15/2023



212+75.00



212+55.00



212+50.00

IDEALS

HIGHWAY PLANS

vhb

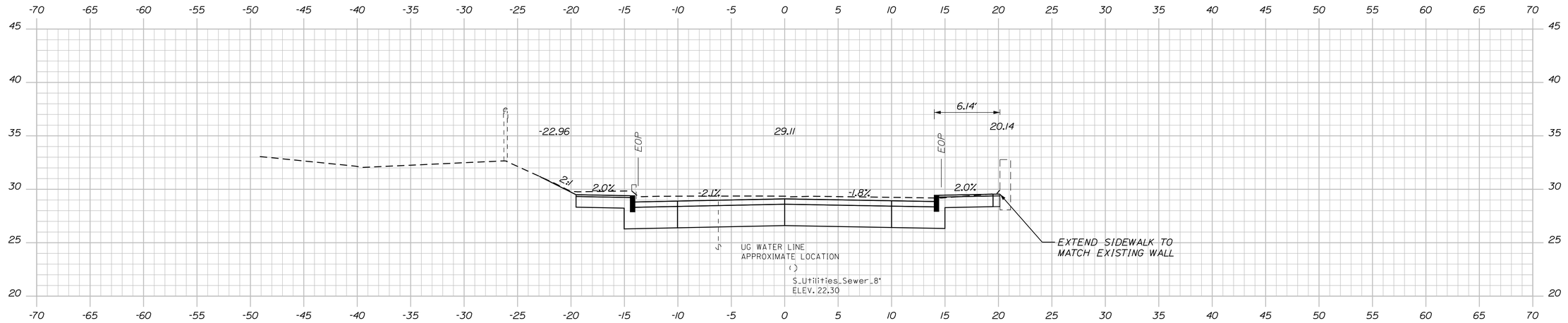
PROJ. MANAGER	JENN CONLEY	BY	DATE
DESIGN-DETAILED	JBD	AHS	09/2023
CHECKED-REVIEWED	ECF	JC	09/2023
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

IDEALS - PORTLAND
SHERWOOD STREET
CROSS-SECTIONS
(6 OF 12)

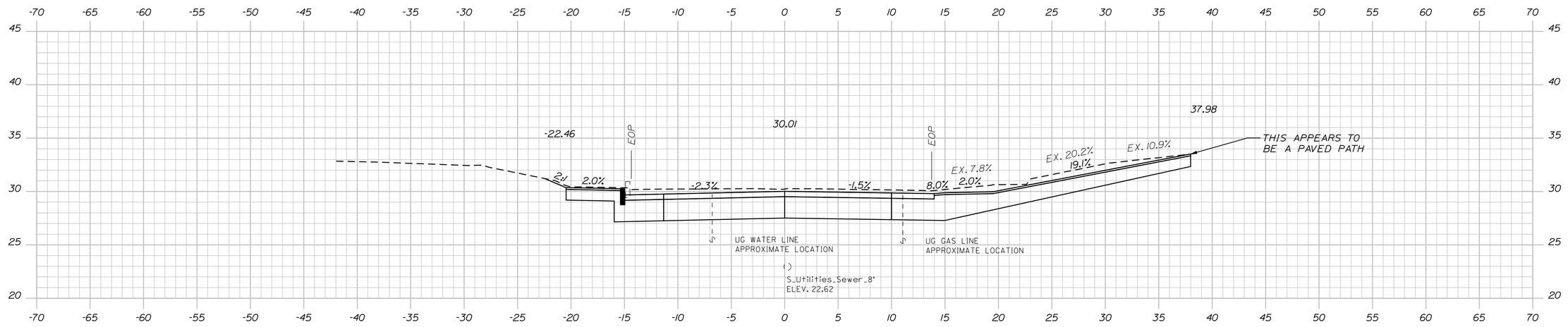
SHEET NUMBER
10
OF 16

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:9/15/2023

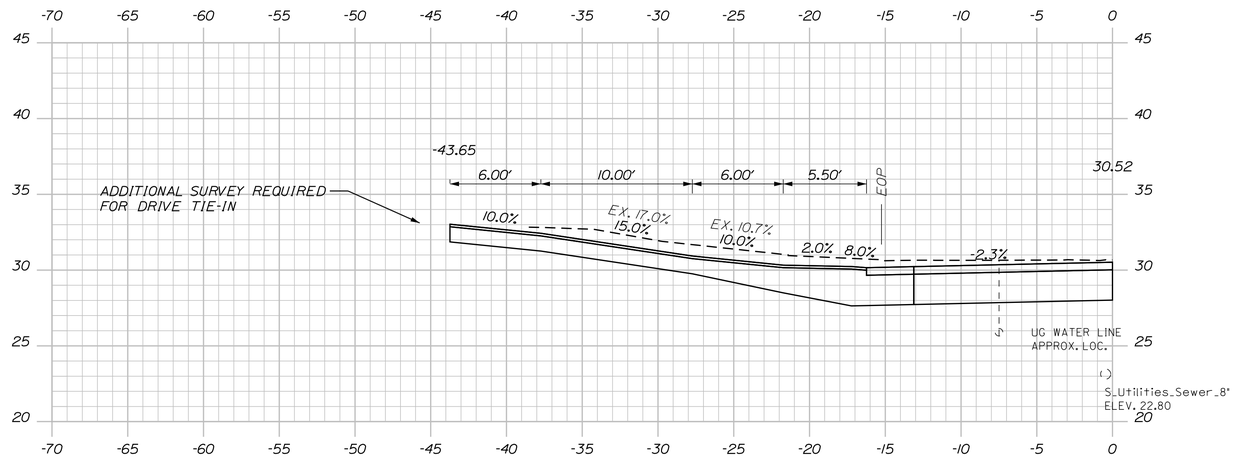
Sta. 212+50.00 to Sta. 212+75.00



213+25.00



213+00.00



212+86.00

IDEALS

HIGHWAY PLANS

vhb

PROJ. MANAGER	JENN CONLEY		DATE
DESIGN-DETAILED	JBD	BY	09/2023
CHECKED-REVIEWED	ECF	AHS	09/2023
DESIGN2-DETAILED2		JC	
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

IDEALS - PORTLAND
SHERWOOD STREET

CROSS-SECTIONS
(7 OF 12)

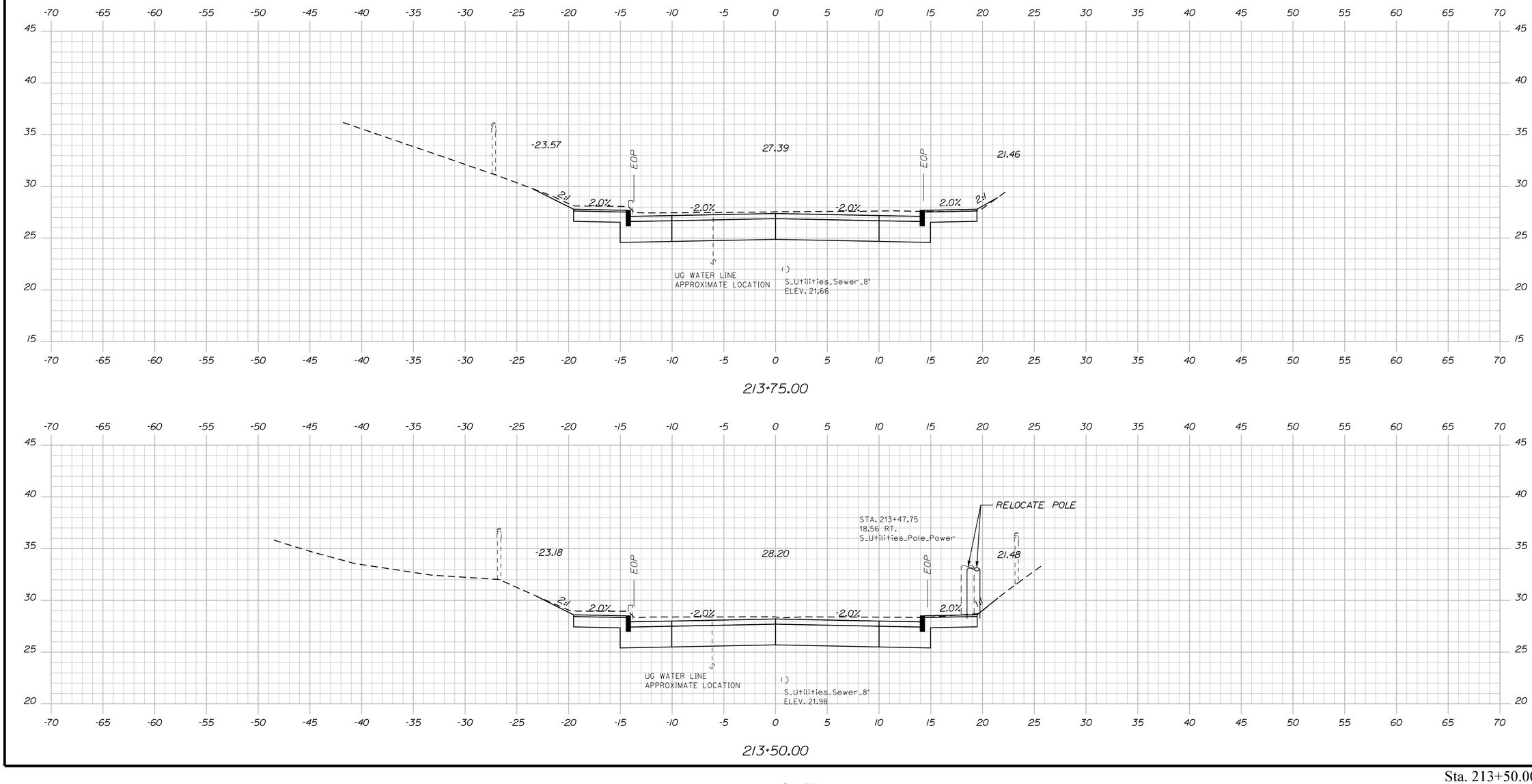
SHEET NUMBER

11

OF 16

Sta. 212+86.00 to Sta. 213+25.00

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:9/15/2023



IDEALS

HIGHWAY PLANS

vhb

PROJ. MANAGER	JENN CONLEY		
DESIGN-DETAILED	JBD	BY	AHS
CHECKED-REVIEWED	ECF		JC
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

	DATE
DESIGN-DETAILED	09/2023
CHECKED-REVIEWED	09/2023

IDEALS - PORTLAND
SHERWOOD STREET

CROSS-SECTIONS
(8 OF 12)

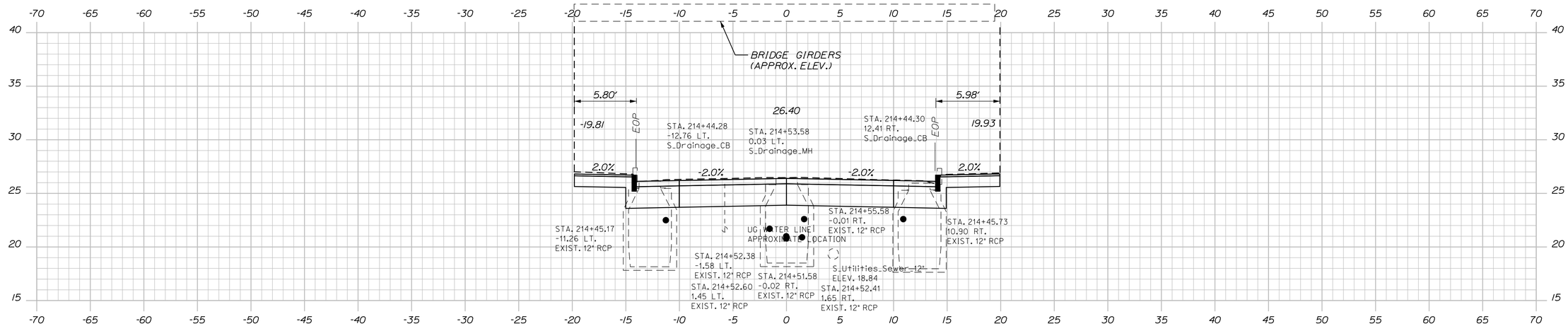
SHEET NUMBER

12

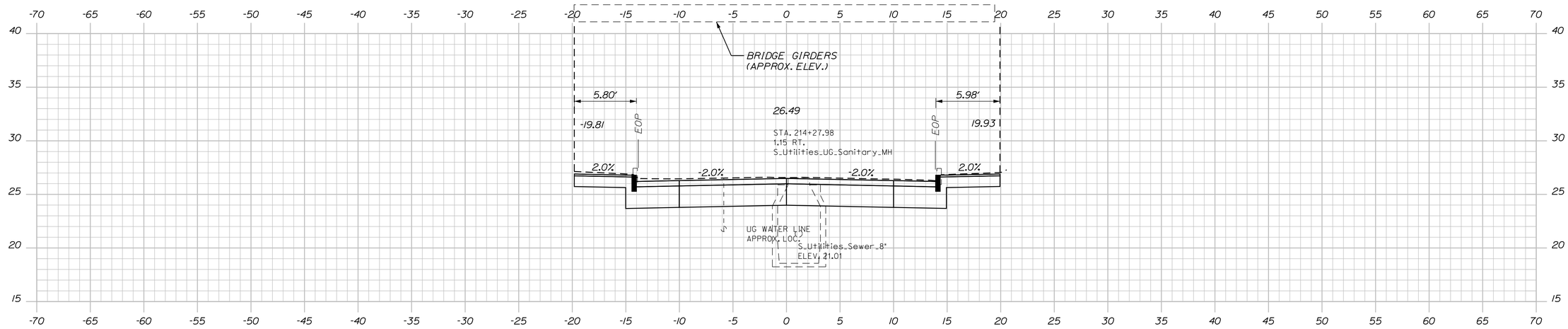
OF 16

Sta. 213+50.00 to Sta. 213+75.00

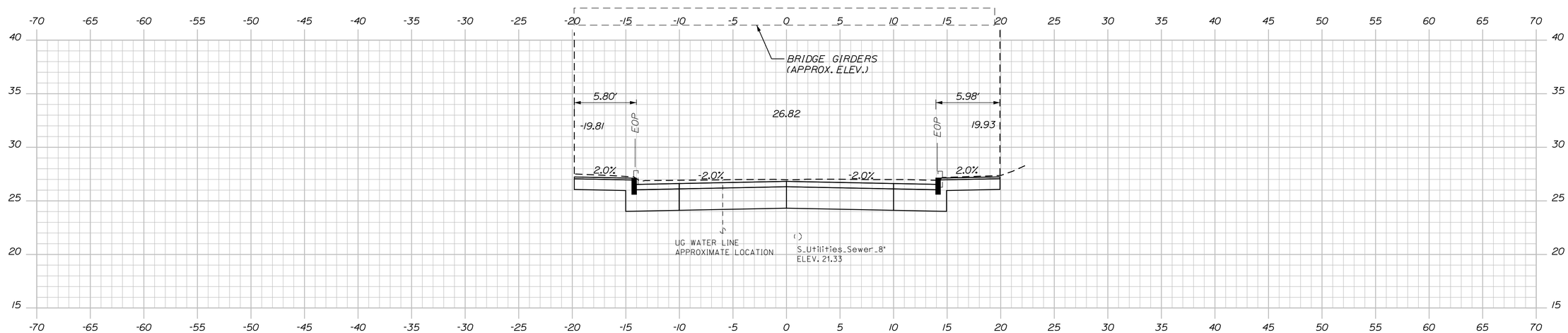
Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:9/15/2023



214+50.00



214+25.00



214+00.00

IDEALS

HIGHWAY PLANS

vhb

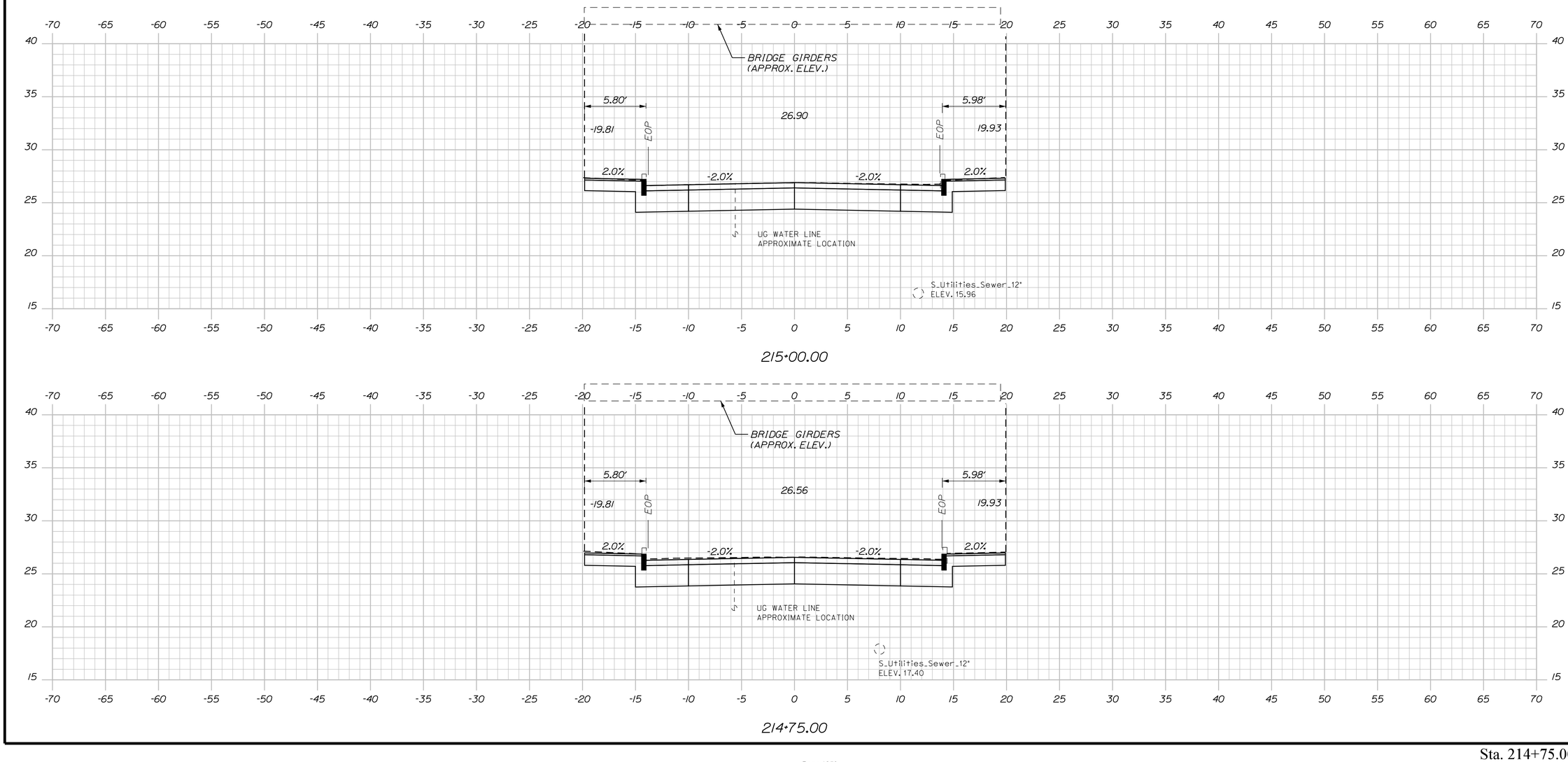
PROJ. MANAGER	JENN CONLEY	
DESIGN-DETAILED	JBD	AHS 09/2023
CHECKED-REVIEWED	ECF	JC 09/2023
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

IDEALS - PORTLAND
SHERWOOD STREET
CROSS-SECTIONS
(9 OF 12)

SHEET NUMBER
13
OF 16

Sta. 214+00.00 to Sta. 214+50.00

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:9/15/2023



Sta. 214+75.00 to Sta. 215+00.00

IDEALS

HIGHWAY PLANS

vhb

PROJ. MANAGER	JENN CONLEY		
DESIGN-DETAILED	JBD	AHS	09/2023
CHECKED-REVIEWED	ECF	JC	09/2023
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

IDEALS - PORTLAND SHERWOOD STREET

CROSS-SECTIONS (10 OF 12)

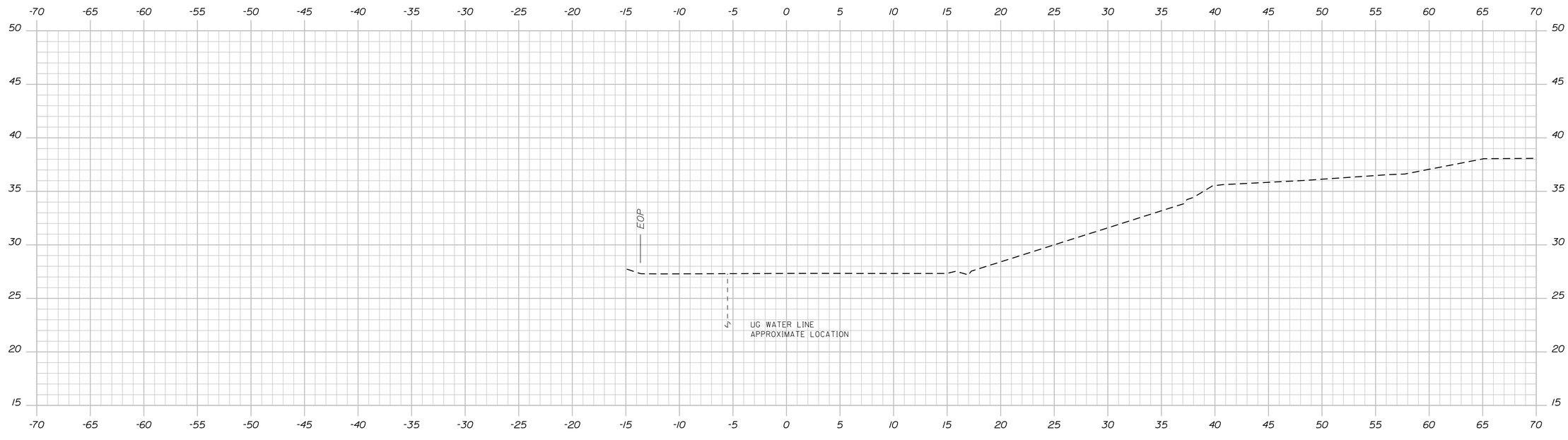
SHEET NUMBER

14

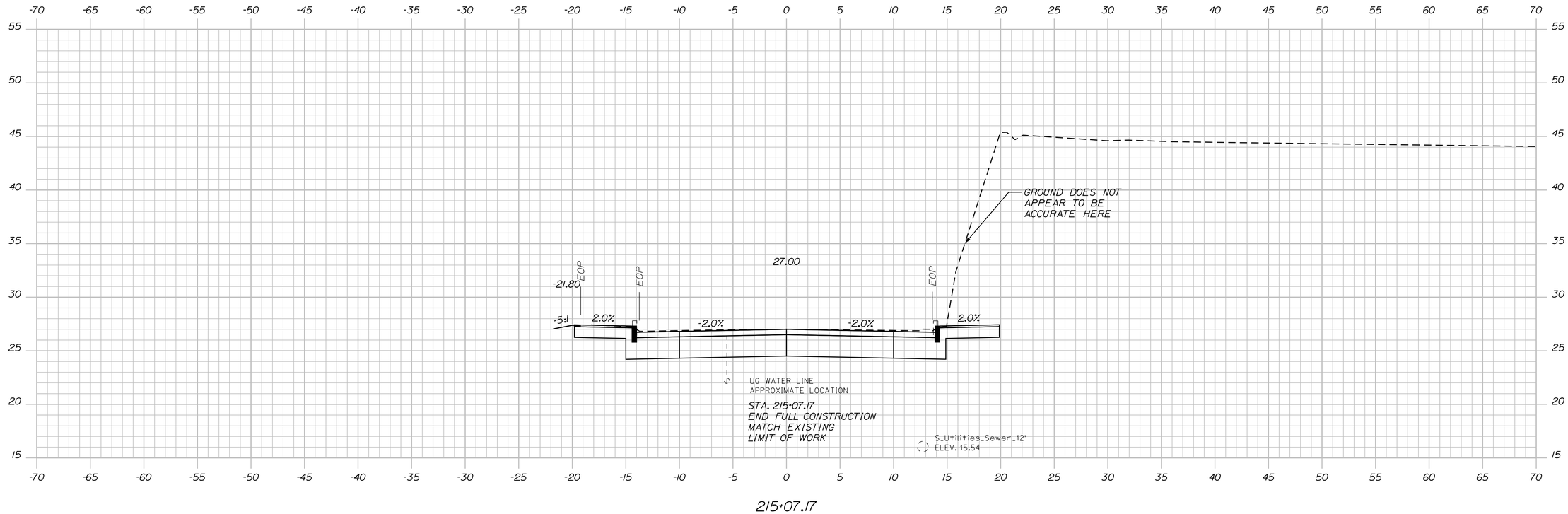
OF 16

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:9/15/2023

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:9/15/2023



215+25.00



215+07.17

IDEALS

HIGHWAY PLANS

vhb

PROJ. MANAGER	JENN CONLEY	
DESIGN-DETAILED	JBD	09/2023
CHECKED-REVIEWED	ECF	09/2023
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1	AHS	
REVISIONS 2	JC	
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

IDEALS - PORTLAND
SHERWOOD STREET

CROSS-SECTIONS
(11 OF 12)

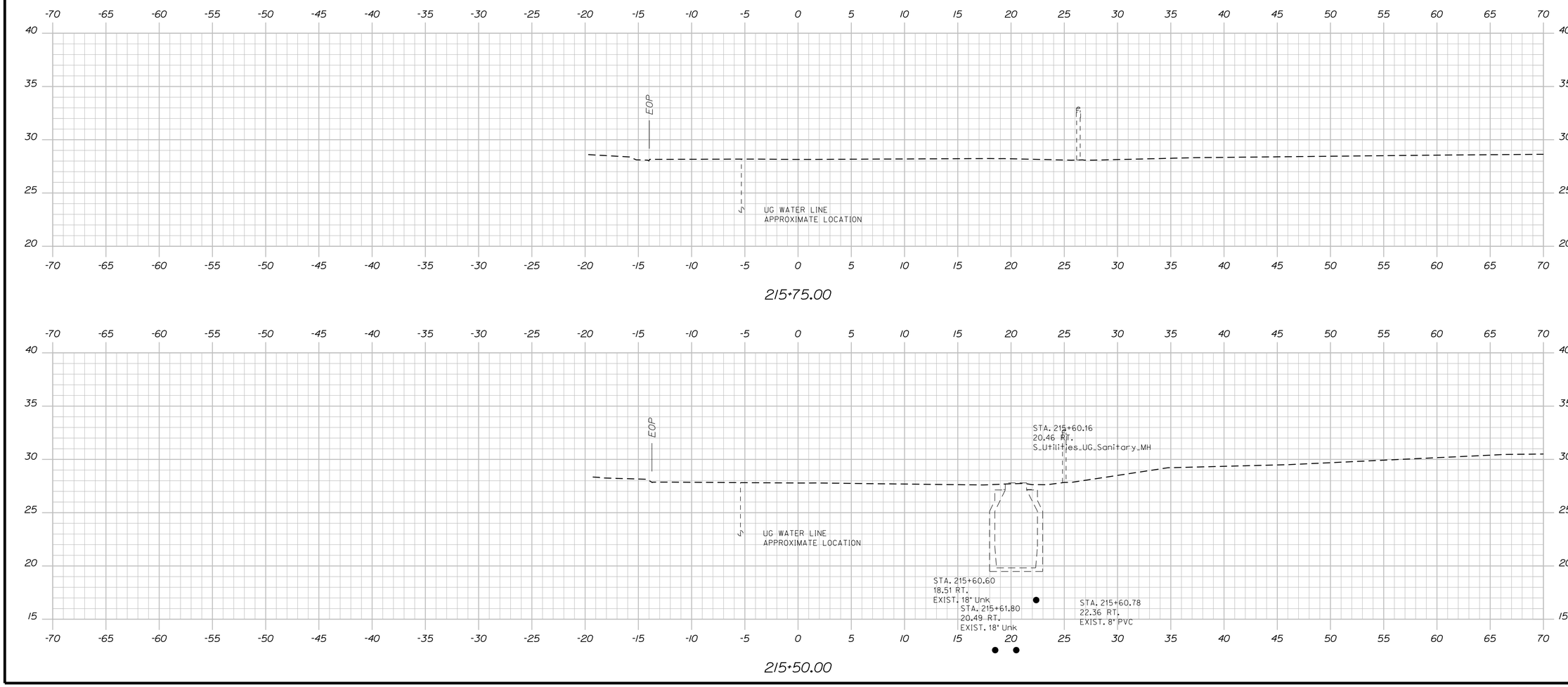
SHEET NUMBER

15

OF 16

Sta. 215+07.17 to Sta. 215+25.00

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:9/15/2023



IDEALS

HIGHWAY PLANS

vhb

	JENN CONLEY	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	JBD	AHS	09/2023
CHECKED-REVIEWED	ECF	JC	09/2023
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

IDEALS - PORTLAND
SHERWOOD STREET

CROSS-SECTIONS
(12 OF 12)

SHEET NUMBER

16

OF 16

Sta. 215+50.00 to Sta. 215+75.00

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:3/21/2024

IDEALS

HIGHWAY PLANS

vhb

	DATE	BY
	09/2023	SP
	09/2023	JC

	JENN CONLEY
PROJ. MANAGER	
DESIGN-DETAILED	AHS
CHECKED-REVIEWED	ECF
DESIGN2-DETAILED2	
DESIGN3-DETAILED3	
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

IDEALS - PORTLAND
SHERWOOD STREET

PLAN

SHEET NUMBER

1

OF 1

SB I-295

NB I-295

VERANDA STREET

SHERWOOD STREET

STA. 210+19.34
BEGIN FULL CONSTRUCTION
MATCH EXISTING
LIMIT OF WORK

POB = STA. 210+00.00

TOP OF FRAME = 35.13'
INV A = 27.5' (15" PVC)
INV B = 29.2' (15" PVC)
INV C = 28.9' (15" PVC)
(* SIZE NOT MEASUREABLE)

TOP OF FRAME = 34.90'
INV A = 25.9' (8" PVC)
INV B = 25.9' (8" PVC)
INV C = 25.9' (8" PVC)

TOP OF FRAME = 34.34'
INV A = 29.0' (*)
INV B = 29.0' (*)
INV C = 29.0' (6" PVC)
(* SIZE NOT MEASUREABLE)

INSTALL CB TYPE AI-P
W/ INLET PROTECTION

MATCH EXISTING STEPS

PROP. ELEV.
33.9'

RELOCATE POLE

6" UD

S55°17'21.81"E

210+00

211+00

212+00

PI = STA. 212+00.00

CURVE DATA #1
PI = 212+00.00
Δ = 3°21'17.9" Lt.

PROP. ELEV.
33.3'

UNDERDRAIN SHOWN OFFSET
FOR CLARITY.
SEE CROSS-SECTIONS FOR
ACTUAL OFFSET (TYP.)

MATCH EXISTING STEPS

PROP. ELEV.
32.9'

TOP OF FRAME = 26.52'
INV A = 21.1' (12" VCP)
INV B = 20.7' (12" VCP)

TOP OF FRAME = 26.18'
INV = 22.5' (12" RCP)

TOP OF FRAME = 26.03'
INV = 22.6' (12" RCP)

EXISTING
BRIDGE
DECK

INSTALL CB
W/ INLET PROTECTION
BEHIND CURB

INSTALL 12" X 14 FT
RCP

TOP OF FRAME = 26.49'
INV A = 21.0' (12" RCP)
INV B = 21.7' (12" RCP)
INV C = 20.8' (12" RCP)

STA. 215+07.25
END FULL CONSTRUCTION
MATCH EXISTING
LIMIT OF WORK

S58°38'39.75"E

213+00

214+00

S55°17'24.15"E

215+00

216+00

ROADWAY
CENTERLINE

12" UD

ROW (TYP.)

RELOCATE POLE

GAS MAIN END

INSTALL 12" X 16 FT
RCP

INSTALL CB TYPE AI-P
W/ INLET PROTECTION

TOP OF FRAME = 27.86'
INV A = 12.1' (18" *)
INV B = 16.8' (8" PVC)
INV C = 12.5' (12" *)
INV D = 12.1' (18" *)
(* PIPE MATERIAL NOT
VISIBLE)

PROP. ELEV.
33.6'

PROP. ELEV.
34.0'

PROP. ELEV.
33.9'

MATCH EXISTING STEPS

TOP OF FRAME = 31.46'
INV A = 26.8' (8" PVC)
INV B = 26.3' (4" PVC)
INV C = 23.1' (8" PVC)

PI = STA. 213+10.07

CURVE DATA #1
PI = 213+10.07
Δ = 3°21'15.6" Rt.

PC = STA. 216+82.01

CURVE DAT
PI = 217+3
D = 28°38
Δ = 31°38
R = 200.0
L = 110.47
T = 56.68'
E = 7.88'

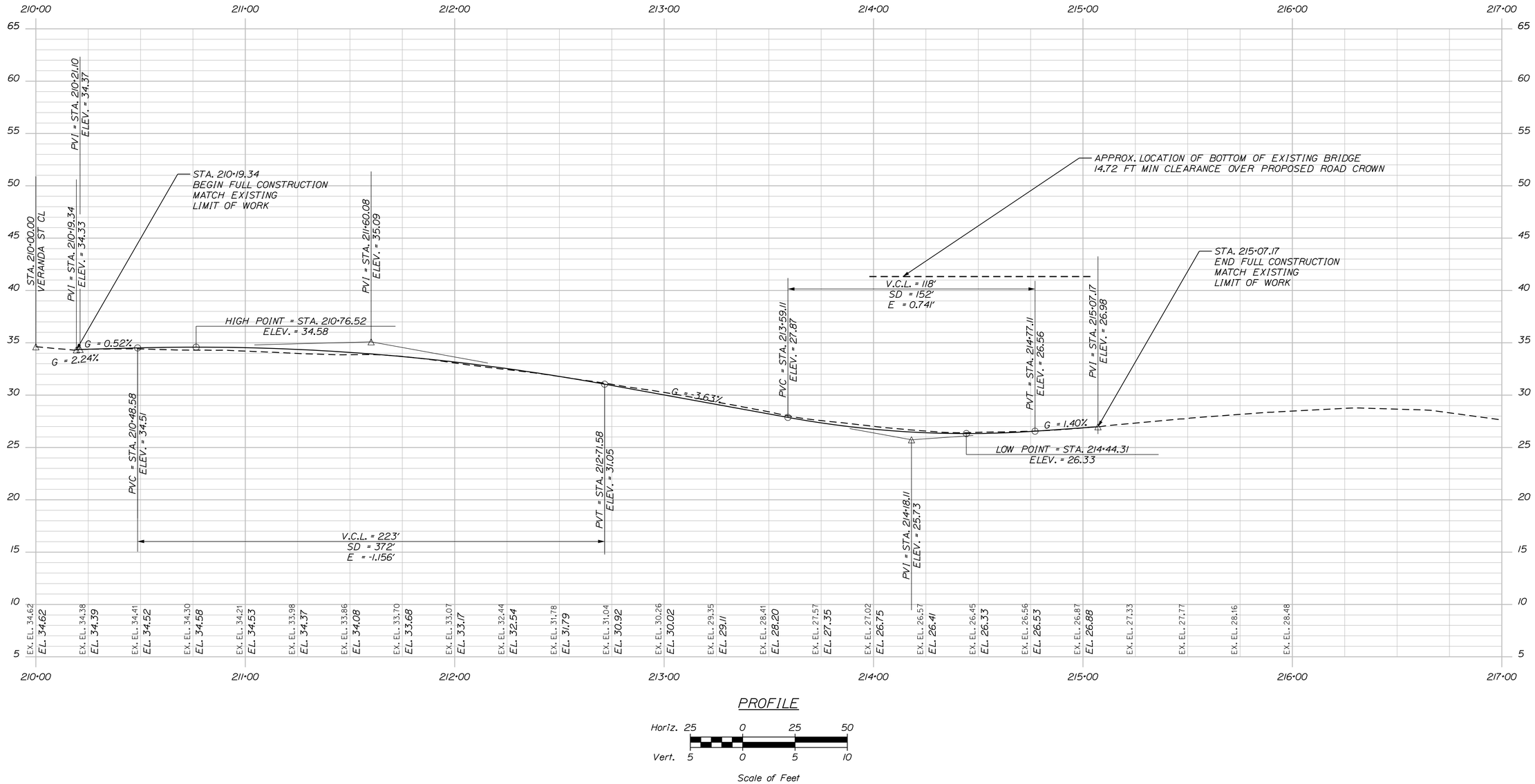
TOP OF FRAME = 33.86'
INV A = 27.0' (15" PVC)
INV B = 27.2' (12" PVC)
INV C = 26.8' (15" PVC)

PLAN

25 0 25 50

Scale of Feet

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:3/21/2024



PROFILE

Horiz. 25 0 25 50

Vert. 5 0 5 10

Scale of Feet

IDEALS

HIGHWAY PLANS

vhb

	BY	DATE
JENN CONLEY		
PROJ. MANAGER	SP	09/2023
DESIGN-DETAILED	AHS	
CHECKED-REVIEWED	EOF	
DESIGN2-DETAILED2	JC	09/2023
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

IDEALS - PORTLAND SHERWOOD STREET

PROFILE

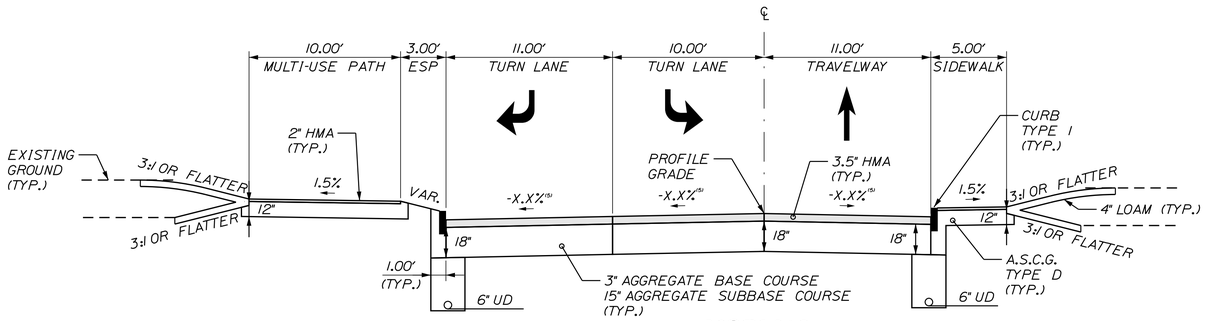
SHEET NUMBER

2

OF 25

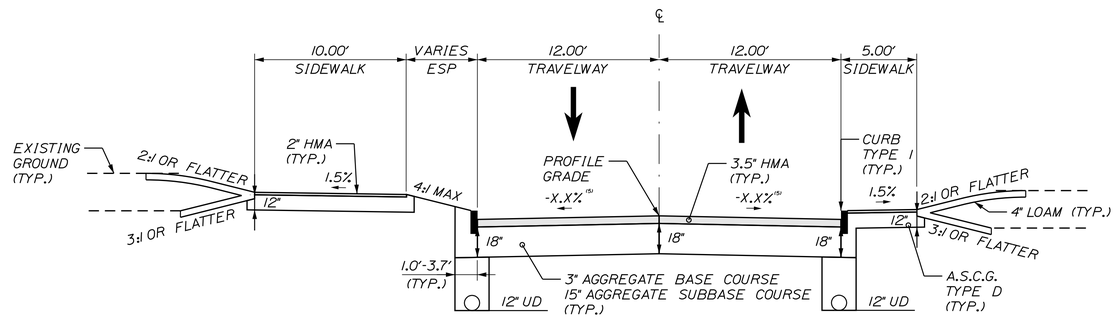
TYPICAL SECTIONS
Sherwood St

SHERWOOD STREET SUPERELEVATION TABLE			
TURN LANE (%)	TRAVEL LANE (%)	STATION	TRAVEL LANE %
		START	
0.6%	0.6%	**210+19.34**	-0.7%
0.3%	0.3%	**210+25.00**	-0.8%
-0.8%	-0.8%	**210+50.00**	-1.4%
-2.0%	-2.0%	**210+75.00**	-2.0%
		TO	
-2.0%	-2.0%	**211+50.00**	-2.0%
-2.25%	-2.25%	**211+75.00**	-1.5%
		TO	
-	-2.25%	**213+00.00**	-1.5%
-	-2.1%	**213+25.00**	-1.8%
-	-2.0%	**213+50.00**	-2.0%
		TO	
-	-2.0%	**215+00.00**	-2.0%
-	MATCH	**215+07.17**	MATCH
		END	



NORMAL

LEFT SIDEWALK	(2) 11' WIDE LANES & (1) 10' WIDE LANE	RIGHT SIDEWALK
STATION TO STATION	STATION TO STATION	STATION TO STATION
210+19.34 TO 212+00.00	210+19.34 TO 212+00.00	210+19.34 TO 212+00.00



NORMAL

LEFT SIDEWALK	(2) 12' WIDE LANES	RIGHT SIDEWALK
STATION TO STATION	STATION TO STATION	STATION TO STATION
213+25.00 TO 213+98.00	213+25.00 TO 213+98.00	213+25.00 TO 213+98.00

NOTES:

1. THE PAVEMENT AND BASE DEPTHS AS SHOWN ON THE PLANS ARE INTENDED TO BE NOMINAL.
2. CROWNS FOR BOTH NORMAL AND SUPERELEVATION SECTIONS FOR ALL COURSES OF SUBBASE AND PAVEMENT SHALL BE STRAIGHT.
3. THE STATIONING SHOWN UNDER EACH TYPICAL IS APPROXIMATE.
4. 4" OF LOAM SHALL BE USED IN ALL DISTURBED AREAS.
5. SEE SUPERELEVATION TABLE FOR CROSS SLOPES

NOT TO SCALE

IDEALS

HIGHWAY PLANS

vhb

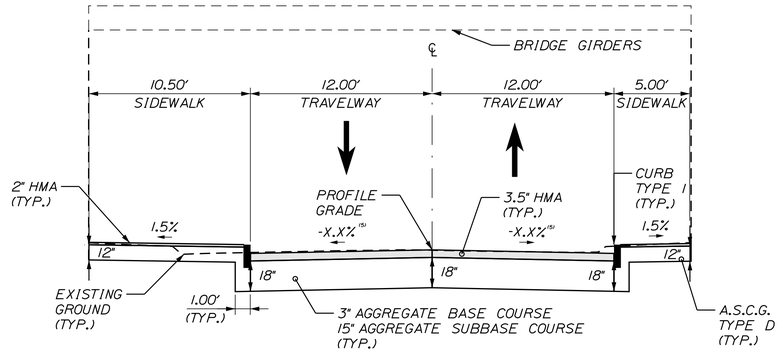
PROJ. MANAGER	JENN CONLEY		
DESIGN-DETAILED	AHS	SP	09/2023
CHECKED-REVIEWED	EOF	JC	09/2023
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

IDEALS - PORTLAND
SHERWOOD STREET
TYPICALS
(1 OF 6)

SHEET NUMBER
3
OF 25

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:3/21/2024

TYPICAL SECTIONS
Sherwood St



NORMAL

LEFT SIDEWALK	(2) 12' WIDE LANES	RIGHT SIDEWALK
STATION TO STATION	STATION TO STATION	STATION TO STATION
213+98.00 TO 215+07.17	213+98.00 TO 215+07.17	213+98.00 TO 215+07.17

NOTES:

1. THE PAVEMENT AND BASE DEPTHS AS SHOWN ON THE PLANS ARE INTENDED TO BE NOMINAL.
2. CROWNS FOR BOTH NORMAL AND SUPERELEVATION SECTIONS FOR ALL COURSES OF SUBBASE AND PAVEMENT SHALL BE STRAIGHT.
3. THE STATIONING SHOWN UNDER EACH TYPICAL IS APPROXIMATE.
4. 4" OF LOAM SHALL BE USED IN ALL DISTURBED AREAS.
5. SEE SUPERELEVATION TABLE FOR CROSS SLOPES

NOT TO SCALE

IDEALS

HIGHWAY PLANS

vhb

PROJ. MANAGER	JENN CONLEY	
DESIGN-DETAILED	AHS	SP
CHECKED-REVIEWED	EOF	JC
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		DATE
REVISIONS 2		09/2023
REVISIONS 3		09/2023
REVISIONS 4		
FIELD CHANGES		

IDEALS - PORTLAND
SHERWOOD STREET
TYPICALS
(2 OF 6)

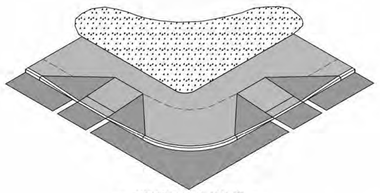
SHEET NUMBER
4
OF 25

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:3/21/2024

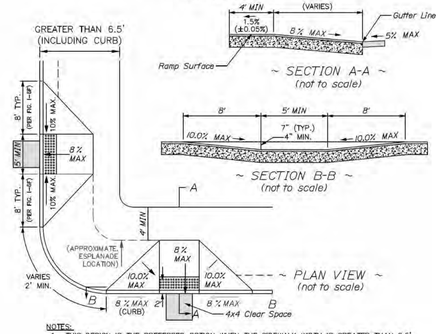
Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:3/21/2024

GENERAL NOTES

1. DESIGN OF ACCESSIBLE RAMPS AND ASSOCIATED FACILITIES ARE GOVERNED BY THE 2010 AMERICANS WITH DISABILITIES ACT (ADA) STANDARDS FOR ACCESSIBLE DESIGN, WHICH IS DETAILED IN DOJ SECTION 28 CFR 35.151. ADDITIONAL GUIDANCE AND INFORMATION CAN BE FOUND IN THE PROPOSED PUBLIC RIGHTS-OF-WAY ACCESSIBILITY GUIDELINES PUBLISHED BY THE U.S. ACCESS BOARD. IN ANY CASE WHERE THE DESIGN REQUIREMENTS ARE MORE STRINGENT BETWEEN ADA STANDARDS AND CITY REQUIREMENTS, THE ADA STANDARDS SHALL GOVERN.
2. SIDEWALKS SHALL BE CONSTRUCTED IN BRICK, CONCRETE, OR BITUMINOUS, ACCORDING TO THE SIDEWALK & DRIVEWAY APRON MATERIALS POLICY, UNLESS DIRECTED OTHERWISE BY THE CITY ENGINEER.
3. SIDEWALKS AND RAMPS SHALL BE BUILT ACCORDING TO THE FOLLOWING DIMENSIONS AND GRADES:
   SIDEWALK RUNNING SLOPE: MATCH ADJACENT STREET GRADE
   SIDEWALK CROSS SLOPE: 1.0% MINIMUM, 2.0% MAXIMUM
   SIDEWALK WIDTH: 5'-0" MINIMUM, WIDER PREFERRED.
   ESPLANADE (WHERE PROVIDED) 2'-0" MINIMUM, 4'-0" OR GREATER PREFERRED IF LANDSCAPED.
4. TWO CURB RAMPS ARE REQUIRED AT EACH SIDEWALK CORNER. EACH CURB RAMP SHALL CONNECT THE PEDESTRIAN ACCESS ROUTE AT EACH PEDESTRIAN STREET CROSSING. IN ALTERATIONS WHERE PHYSICAL CONSTRAINTS PREVENT TWO CURB RAMPS FROM BEING INSTALLED AT A STREET CORNER, A SINGLE PEDESTRIAN CURB RAMP MAY BE PERMITTED.
5. OPPOSING CURB RAMPS AT A SINGLE CROSSING SHALL ALIGN TO PROVIDE A STRAIGHT PATH OF TRAVEL FROM THE TOP OF THE RAMP TO THE CURB RAMP ON THE OPPOSITE SIDE OF THE ROADWAY TO THE MAXIMUM EXTENT FEASIBLE.
6. ALL SIDEWALKS AND RAMPS SHALL DRAIN TOWARD THE STREET, DRIVEWAY, OR PARKING AREA, WITH A MAXIMUM CROSS SLOPE OF 2.0%.
7. LEVEL LANDINGS (NO GREATER THAN 2.0% SLOPE IN ANY DIRECTION) AT THE BOTTOM OF PERPENDICULAR RAMPS SHALL BE WHOLLY CONTAINED WITHIN MARKED CROSSWALKS.
8. PONDING SHALL NOT BE PERMITTED WITHIN THE CURB RAMP LIMITS. RAMPS SHALL NOT ALTER ROADWAY DRAINAGE PATTERNS.
9. TRANSITION FROM RAMPS TO WALKS OR STREET SURFACE SHALL BE FLUSH AND FREE OF ABRUPT CHANGES. PAVEMENT AT THE STREET SURFACE SHALL BE MILLED AND REPAVED TO ACHIEVE FLUSH CONDITION.
10. CURB RAMP AND FORM WORK SLOPES SHALL BE CHECKED WITH A DIGITAL LEVEL OF AN APPROPRIATE LENGTH. NO PORTION OF A RAMP RUN SHALL EXCEED THE MAXIMUM SLOPE REQUIREMENT.
11. THE COUNTER SLOPE WITHIN 2' OF THE CURB RAMP SHALL BE 5% MAXIMUM. IN ALTERATIONS, IF THE COUNTER SLOPE OF 5% MAXIMUM CANNOT BE ACHIEVED, THE SLOPE ELEVATION MAY BE ADJUSTED SO THAT THE COMBINED COUNTER SLOPE AND RAMP SLOPE DO NOT EXCEED 13.3%.
12. VERTICAL DROP-OFF EDGES TO RAMPS SHALL NOT BE BUILT UNLESS THE RAMP ABUTS AN ESPLANADE OR OTHER AREA NOT TO BE USED BY PEDESTRIANS.
13. AT MARKED CROSSWALKS, THE FULL WIDTH OF THE RAMP OR LANDING SHALL BE CONTAINED WITHIN THE PAVEMENT MARKINGS.
14. DETECTABLE WARNING PANELS SHALL BE PROVIDED ON ALL RAMPS AS PER FIGURE I-7 OF THESE STANDARD DETAILS.
15. RAMP FLARES SHOULD BE LOCATED OUTSIDE THE DIRECT LINE OF TRAVEL MOST LIKELY TO BE FOLLOWED BY THE VISUALLY IMPAIRED.
16. SIGNS, POLES, PLANTERS, MAILBOXES, ETC. SHALL NOT BE LOCATED WHERE THEY WILL INTERFERE WITH THE USE OF SIDEWALK RAMPS.
17. SIDEWALK RAMPS SHALL NOT BE LOCATED WHERE USERS MUST CROSS DROP INLET GRATES, MANHOLE COVERS, OR OTHER ACCESS LIDS. IF THIS CANNOT BE AVOIDED, THEN GRATE DESIGN AND PLACEMENT SHALL CONFORM TO ADA REQUIREMENTS.
18. THE PUBLIC SIDEWALK CURB RAMP STANDARDS DEPICTED HERE MAY NOT BE APPROPRIATE FOR ALL LOCATIONS. FIELD CONDITIONS AT INDIVIDUAL LOCATIONS MAY REQUIRE SPECIFIC DESIGNS. RAMP DESIGNS THAT ARE COMPLIANT WITH ADA BUT NOT LISTED IN THESE DETAILS MAY BE APPROVED BY THE CITY ENGINEER.
19. DESIGNS MUST BE CONSISTENT WITH THE PROVISIONS OF THESE DETAILS AND TO ADA GUIDELINES TO THE MAXIMUM EXTENT FEASIBLE ON ALTERATION PROJECTS, AND WHEN STRUCTURALLY PRACTICABLE ON NEW CONSTRUCTION PROJECTS AS REQUIRED BY THE ADA ACCESSIBILITY GUIDELINES.
20. MAXIMUMS AND MINIMUMS DO NOT HAVE TOLERANCES AND ARE NOT TO BE EXCEEDED OR UNMET.
21. THE STANDARD TURNING SPACE (LEVEL LANDING) IS 4'-0" X 4'-0" SLOPING NO MORE THAN 2.0%. WHERE THE TURNING SPACE SHALL BE 4'-0" MINIMUM BY 5'-0" MINIMUM. THE 5'-0" DIMENSION SHALL BE PROVIDED IN THE DIRECTION OF THE RAMP RUN.
22. DETECTABLE WARNINGS SHALL BE INSTALLED AT ALL SIGNED OR SIGNALIZED INTERSECTIONS. THEY SHALL HAVE A TRUNCATED DOME SURFACE. THE DOMES SHALL BE IN A SQUARE PATTERN AND ALIGNED WITH PEDESTRIAN TRAFFIC WHERE POSSIBLE.
23. DETECTABLE WARNINGS SHALL SPAN THE WIDTH OF THE PEDESTRIAN RAMP. SEE STANDARD DETAIL FIGURE I-7.
24. ALL DETECTABLE WARNING FIELDS PLACED AT THE SAME INTERSECTION SHALL BE MADE UP OF THE SAME UNIFORM MATERIAL TYPE. DETECTABLE WARNINGS SHALL BE CONTRASTING IN COLOR TO THE ADJACENT WALKWAY.
25. A RAMP WITH A RUNNING SLOPE LESS THAN 5.0% IS DEFINED AS A "BLENDED TRANSITION". BLENDED TRANSITIONS DO NOT REQUIRE A LEVEL LANDING AT THE TOP OF THE RAMP.
26. THE RAMP LENGTH SHALL NOT EXCEED 15 FEET. ADJUST RAMP LENGTH OR SLOPE AS NEEDED TO PROVIDE ACCESS TO THE MAXIMUM EXTENT FEASIBLE.
27. ALL CURB RAMP JOINTS AND GRADE BREAKS SHALL BE FLUSH.
28. RAMP GRADE BREAKS SHALL BE PERPENDICULAR TO THE RUNNING SLOPE.
29. THERE SHALL BE A MINIMUM OF 12" AGGREGATE SUBBASE COURSE - GRAVEL UNDER THE SIDEWALK SURFACE ON PEDESTRIAN RAMPS.
30. DRAINAGE STRUCTURES, UTILITY POLES, TRAFFIC SIGNAL EQUIPMENT OR OTHER OBSTRUCTIONS SHALL NOT BE INSTALLED IN THE CURB RAMP OR TURNING SPACE AREAS.
31. BEFORE RETROFITTING RAMPS, THE CONTRACTOR SHALL VERIFY REMOVAL LIMITS ARE SUFFICIENT TO PROVIDE POSITIVE DRAINAGE, MAINTAIN EXISTING DRAINAGE PATTERNS AND AVOID PONDING IN THE FINAL CONFIGURATION.
32. A TEMPORARY PEDESTRIAN ACCESS ROUTE SHALL BE PROVIDED WHENEVER THE EXISTING PEDESTRIAN ACCESS ROUTE IN THE PUBLIC RIGHT OF WAY IS BLOCKED BY CONSTRUCTION, ALTERATION, MAINTENANCE OR OTHER TEMPORARY CONDITIONS. REFER TO MUTCD FOR GUIDANCE.



~ ISOMETRIC VIEW ~
(not to scale)



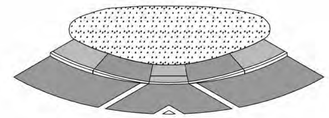
~ SECTION A-A ~
(not to scale)

~ SECTION B-B ~
(not to scale)

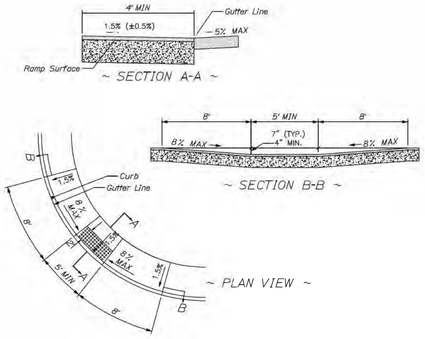
~ PLAN VIEW ~
(not to scale)

NOTES:
1. THIS DESIGN IS THE PREFERRED OPTION WHEN THE SIDEWALK WIDTH IS GREATER THAN 6.5'. USE OTHER OPTIONS ONLY WHEN REQUIRED BY DESIGN CONSTRAINTS.
2. A MINIMUM CURB REVEAL OF 4" IS REQUIRED AT THE APEX OF THE CURB RADIUS.
3. MINIMUM TERMINAL CURB LENGTH SHALL BE 4 FEET.
4. SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.

PERPENDICULAR ADA RAMP – SIDEWALK WIDTH GREATER THAN 6.5' WIDE WITH OR WITHOUT ESPLANADE
NOT TO SCALE



~ ISOMETRIC VIEW ~
(NOT TO SCALE)



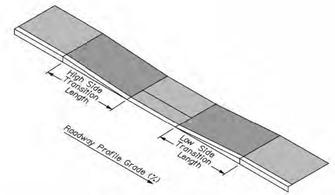
~ SECTION A-A ~

~ SECTION B-B ~

~ PLAN VIEW ~

NOTES:
1. THIS LESS DESIRABLE DESIGN SHOULD NOT BE USED UNLESS REQUIRED BY DESIGN CONSTRAINTS. IT DOES NOT PROVIDE DIRECTIONAL CUES.
2. A MINIMUM CURB REVEAL OF 4" IS REQUIRED AT THE APEX OF THE CURB RADIUS.
3. MINIMUM TERMINAL CURB LENGTH SHALL BE 4 FEET.
4. SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.

APEX RAMP – SIDEWALKS **LESS THAN** 6.5' WIDE WITH NO ESPLANADE
NOT TO SCALE



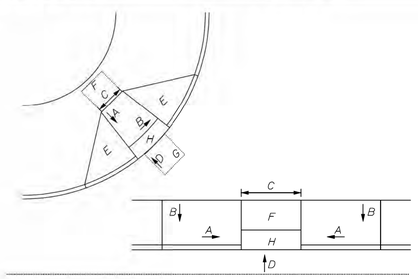
Pedestrian Ramp Length Table

Curb Reveal (Inches)		7	6	5	4	3
	Roadway Profile Grade	Minimum Transition Length Required (Feet)				
Low Side Transition Length	-7% and Lower	4.0	4.0	4.0	4.0	4.0
	-6%	8.0	4.0	4.0	4.0	4.0
	-5%	8.0	4.0	4.0	4.0	4.0
	-4%	8.0	8.0	4.0	4.0	4.0
	-3%	8.0	8.0	4.0	4.0	4.0
	-2%	8.0	8.0	8.0	4.0	4.0
	-1%	8.0	8.0	8.0	4.0	4.0
	0%	8.0	8.0	8.0	8.0	4.0
High Side Transition Length	1%	8.0	8.0	8.0	8.0	4.0
	2%	10.0	8.0	8.0	8.0	4.0
	3%	12.0	10.0	8.0	8.0	8.0
	4%	14.0	12.0	10.0	8.0	8.0
	5%	15.0	15.0	14.0	10.0	8.0
	6%	15.0	15.0	15.0	15.0	12.0
	7% and Hgher	15.0	15.0	15.0	15.0	15.0

Choose roadway profile grade by rounding up for positive grades and down for negative grades. Round to the nearest whole integer. If constraints prevent placement of the ramp length required by the table, place the maximum length possible and check the slope. If above the maximum allowable slope, consider design modifications before considering technical infeasibility.

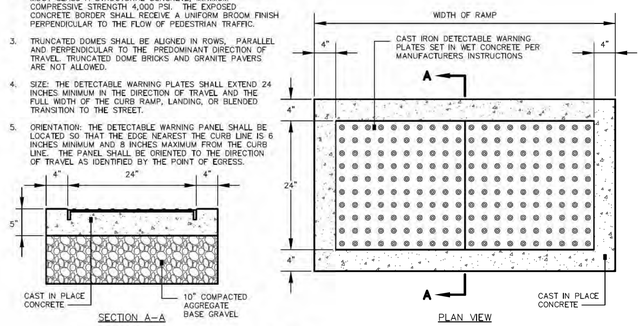
RAMP LENGTH TABLE
FOR SIDEWALK RAMPS
NOT TO SCALE

CURB RAMP REQUIREMENTS		
Running Slope	A	Max. 8.33% (1:12)
Cross Slope	B	Max. 2% (1:50) MIN. 1% *Ramp cross slope at street crossings without stop or signal control may match roadway profile.*
Clear Width	C	Min. 5 feet *For existing ramps only, ramp width may remain 4 feet.*
Counter Slope	D	Max. 5% (1:20) *Adjacent surface must be flush with the ramp.*
Flared Sides	E	Max. 10% (1:10)
Turning Space	F	4 feet by 4 feet *Maximum slope of 2% in any direction. May include Detectable Warnings*
Clear Space	G	4 feet by 4 feet *Located at the bottom of the ramp outside active travel lanes.*
Detectable Warnings	H	*Required at traffic controlled intersections and mid-block crossings, full ramp width.*



PEDESTRIAN RAMP REQUIREMENTS
FOR SIDEWALK RAMPS
NOT TO SCALE

NOTES:
1. ALL DETECTABLE WARNING PLATES SHALL BE UNCOATED CAST IRON. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
2. CAST IN PLACE CONCRETE SHALL MEET SPECIFICATIONS FOR MDOT CLASS A STRUCTURAL CONCRETE, MINIMUM COMPRESSIVE STRENGTH 4,000 PSI. THE EXPOSED CONCRETE BORDER SHALL RECEIVE A UNIFORM BROOM FINISH PERPENDICULAR TO THE FLOW OF PEDESTRIAN TRAFFIC.
3. TRUNCATED DOMES SHALL BE ALIGNED IN ROWS, PARALLEL AND PERPENDICULAR TO THE PREDOMINANT DIRECTION OF TRAVEL. TRUNCATED DOME BRICKS AND GRANITE PAVERS ARE NOT ALLOWED.
4. SIZE: THE DETECTABLE WARNING PLATES SHALL EXTEND 24 INCHES MINIMUM IN THE DIRECTION OF TRAVEL AND THE FULL WIDTH OF THE CURB RAMP, LANDING, OR BLENDED TRANSITION TO THE STREET.
5. ORIENTATION: THE DETECTABLE WARNING PANEL SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 INCHES MINIMUM AND 8 INCHES MAXIMUM FROM THE CURB LINE. THE PANEL SHALL BE ORIENTED TO THE DIRECTION OF TRAVEL AS IDENTIFIED BY THE POINT OF EGRESS.



SIDEWALK RAMP DETECTABLE WARNING PANEL
NOT TO SCALE

IDEALS

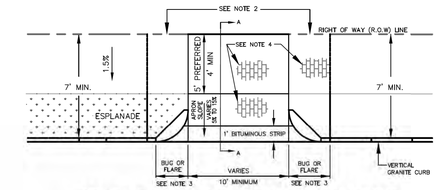
HIGHWAY PLANS

vhb

	DATE	BY
PROJ. MANAGER		JENN CONLEY
DESIGN-DETAILED	09/2023	AHS
CHECKED-REVIEWED	09/2023	EOF
DESIGN2-DETAILED2		JC
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

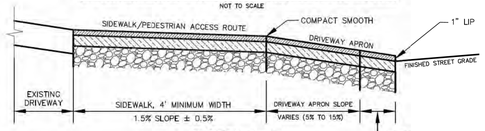
IDEALS - PORTLAND
SHERWOOD STREET
TYPICALS
(3 OF 6)

SHEET NUMBER
5
OF 25



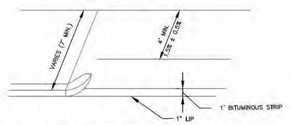
STANDARD RESIDENTIAL DRIVEWAY APRON LAYOUT

NOT TO SCALE



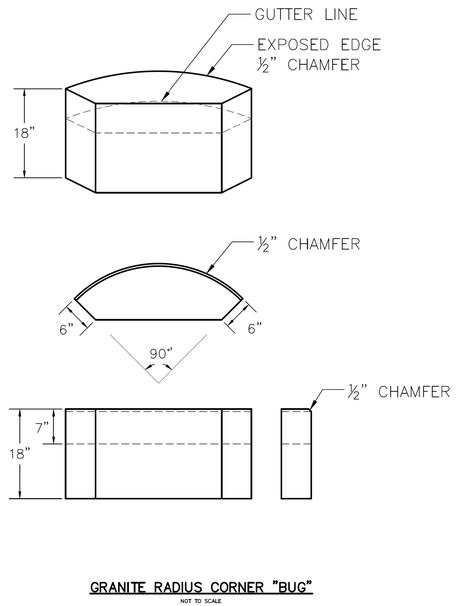
SECTION A–A

NOT TO SCALE



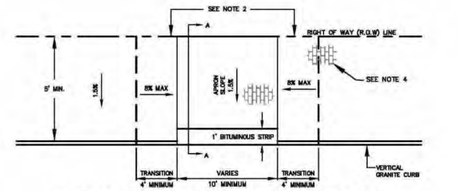
NOTES:

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 5%, 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 IN ROW 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.
5. THIS LAYOUT MAY BE REQUIRED AT MINOR DRIVEWAYS SERVING COMMERCIAL OR INDUSTRIAL USES.



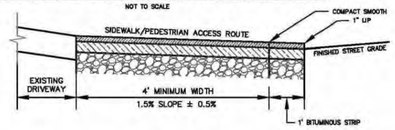
GRANITE RADIUS CORNER "BUG"

NOT TO SCALE



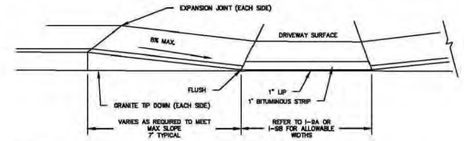
DRIVEWAY APRON AT CONSTRAINED SIDEWALK LAYOUT

NOT TO SCALE



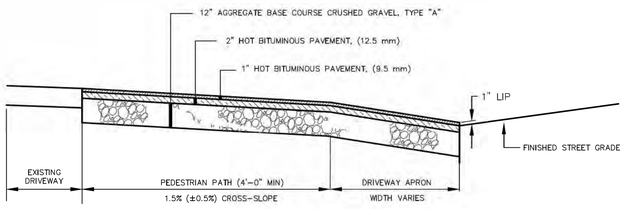
SECTION A–A

NOT TO SCALE



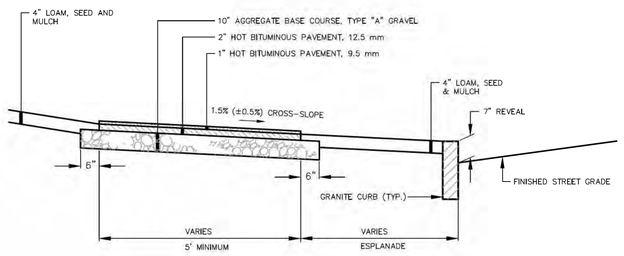
NOTES:

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. SIDEWALK TRANSITION SLOPE SHALL NOT EXCEED 8.33% RAMP LENGTH SHALL ACCOMMODATE THIS CONSTRAINT UP TO 15 FOOT RAMP LENGTH OR AS OTHERWISE REQUIRED BY ADA STANDARDS.
3. MOUNTABLE CURB (SEE DETAIL I–15) OR INCREASE IF BITUMINOUS LIP IS PREFERRED TO MAINTAIN SIDEWALK GRADE THROUGH APRON.
4. ALL MATERIALS IN ROW 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.



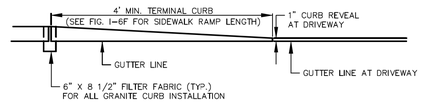
BITUMINOUS DRIVEWAY APRON

NOT TO SCALE

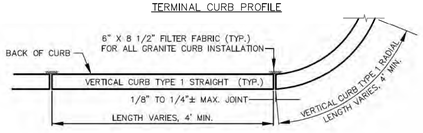


BITUMINOUS SIDEWALK

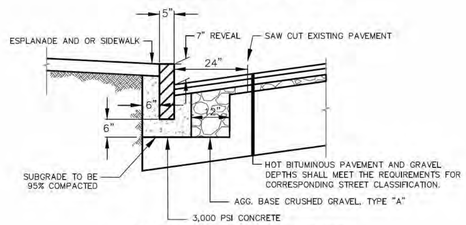
NOT TO SCALE



TERMINAL CURB PROFILE



VERTICAL GRANITE CURB PLAN VIEW



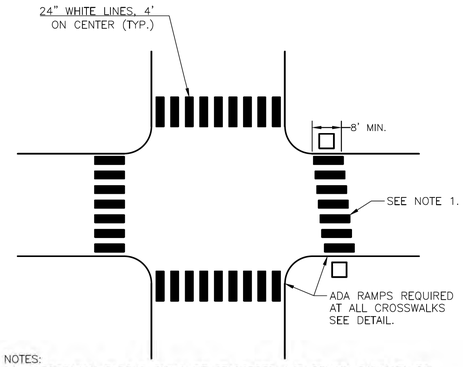
VERTICAL GRANITE CURB CROSS SECTION

NOTES:

1. INDIVIDUAL PIECES OF CURB SHORTER THAN 4 L.F. ARE NOT ALLOWED, WITH THE EXCEPTION OF RADIAL CURB.
2. 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 CURB.
3. CURBING SHALL BE SET IN A 6–INCH BED OF POURED IN PLACE 3,000 PSI CONCRETE MIX.
4. WOODEN SHIMS MAY BE USED TO SET CURB.

VERTICAL GRANITE CURB

NOT TO SCALE



NOTES:

1.) CROSSWALK BLOCKS SHALL BE STAGGERED AND REMAIN PARALLEL TO THE ROADWAY CENTERLINE AT SKEWED CROSSING LOCATIONS.
2.) CROSSWALK MARKINGS LOCATED ON ARTERIAL STREETS SHALL BE APPLIED WITH A THERMOPLASTIC MATERIAL (OR APPROVED EQUAL) MEETING ALL MANUFACTURER AND MUTCD REQUIREMENTS.
3.) THE ESTABLISHMENT PERIOD FOR CROSSWALK MARKINGS SHALL BE BASED ON MANUFACTURER'S SPECIFICATIONS AND SHALL AT A MINIMUM MEET MAINE DOT STANDARD SPECIFICATION 627.07 ESTABLISHMENT PERIOD REQUIREMENTS.

CROSSWALK MARKINGS

NOT TO SCALE

IDEALS

HIGHWAY PLANS

vhb

PROJ. MANAGER	JENN CONLEY	BY
DESIGN-DETAILED	AHS	SP
CHECKED-REVIEWED	ECF	JC
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

DATE
09/2023
09/2023

IDEALS - PORTLAND SHERWOOD STREET

TYPICALS (4 OF 6)

SHEET NUMBER

6

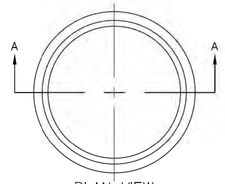
OF 25

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: aslegel Date:3/21/2024

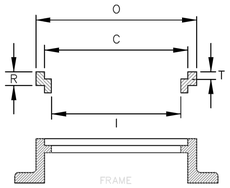
Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:3/21/2024

1. ALL CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 lbs. PER SQ. INCH AT THE END OF 28 DAYS, UNLESS OTHERWISE NOTED.
2. MANHOLES MAY BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE, OR CAST IN PLACE.
3. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPEC. C-478.
4. ALL PIPES ENTERING MANHOLES AND CATCH BASINS SHALL HAVE FLEXIBLE PIPE CONNECTIONS WITH STAINLESS STEEL BANDS. FILL ANY ANNUAL SPACE WITH NON SHRINK GROUT.
5. ALL STORM AND SEWER MANHOLE COVERS SHALL BE SOLID
6. ALL SANITARY MANHOLE COVERS SHALL HAVE "SEWER" CAST INTO THE COVER. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
7. SEWER BRICK SHALL CONFORM TO ASTM SPEC. DESIGNATE ON C-32-63, GRADE MA AND SA.
8. INVERTS SHALL BE BUILT TO THE HEIGHT OF THE FOLLOWING AS DETERMINED BY THE LARGEST PIPE SIZE.
   - 8.1. FOR PIPE SIZES 4"-12" INVERTS SHALL GO TO THE TOP OF THE PIPE.
   - 8.2. FOR PIPE SIZES 15"-36" INVERTS SHALL GO TO THE SPRING LINE.
   - 8.3. FOR PIPE SIZES 42"-60" INVERTS SHALL GO TO THE 1/3 OF PIPE SIZE
9. ALL SANITARY MANHOLES SHALL HAVE A WATERPROOFING COATING APPLIED TO THE EXTERIOR SURFACE.
10. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48-CLASS 35.
11. EXISTING MANHOLES, CATCH BASINS, FRAMES, AND COVERS SHALL BE SALVAGED BY THE CONTRACTOR, AND SHALL REMAIN THE PROPERTY OF THE CITY OF PORTLAND.
12. ALL CATCH BASIN OUTLETS SHALL BE INSTALLED WITH A HOOD / CASCO TRAP. SEE FIGURE II-09.
13. ALL MANHOLES AND CATCH BASINS REQUIRE BUOYANCY CALCULATIONS AND THE STRUCTURES SHALL BE MODIFIED AS NECESSARY BASED ON THOSE CALCULATIONS.

GENERAL NOTES FOR MANHOLES AND CATCH BASINS



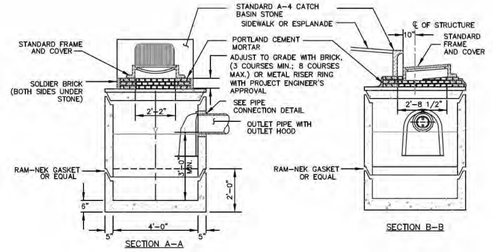
PLAN VIEW

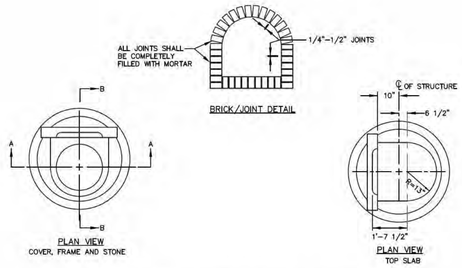


SECTION A-A

SIZE	C	R	T	O	I	Wt.
R241 1/2	24	1 1/2	1 1/8	26 1/4	22 1/2	60
R242	24	2	1 1/8	26 1/4	22 1/2	80
R242 1/2	24	2 1/2	1 1/8	26 1/4	22	100
R243	24	3	1 1/8	26 1/4	22	120

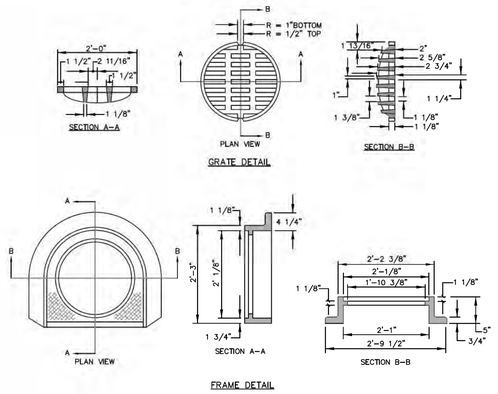
MANHOLE RISER RING
NOT TO SCALE



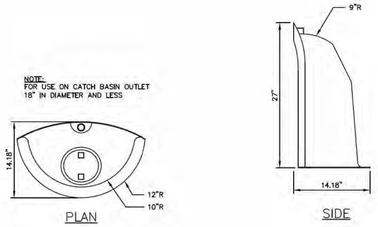


PRECAST CONCRETE CATCH BASIN - TYPE "E"
NOT TO SCALE

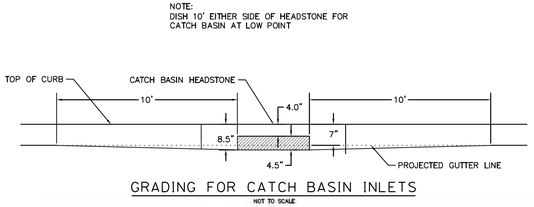
1. APPROVED CATCH BASIN FRAMES:
   - 1.1. EAST JORDAN = 7375Z
   - 1.2. NEENAH = R-3248
   - 1.3. OR APPROVED EQUAL
2. APPROVED CATCH BASIN GRATES
   - 2.1. EAST JORDAN = 2440M
   - 2.2. NEENAH = R-3248
   - 2.3. OR APPROVED EQUAL



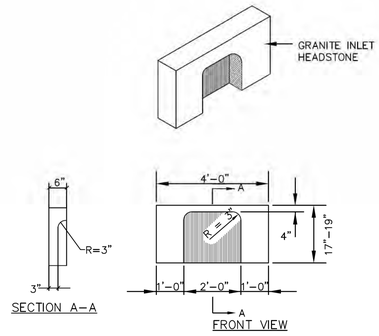
CATCH BASIN FRAME & GRATE



CATCH BASIN HOOD
NOT TO SCALE



GRADING FOR CATCH BASIN INLETS
NOT TO SCALE



4' GRANITE HEADSTONE FOR CATCH BASIN INLET
NOT TO SCALE

IDEALS

HIGHWAY PLANS

vhb

	BY	DATE
PROJ. MANAGER	JENN CONLEY	
DESIGN-DETAILED	AHS	09/2023
CHECKED-REVIEWED	EOF	09/2023
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

IDEALS - PORTLAND SHERWOOD STREET TYPICALS (5 OF 6)

SHEET NUMBER

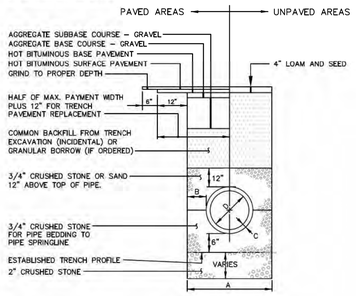
7

OF 25

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:3/21/2024

NOTES:
DEPTH OF BITUMINOUS PAVEMENT AND AGGREGATE COURSES SHALL BE DETERMINED BY STREET CLASSIFICATION.

ANY ALTERNATE TRENCHING OR PAYMENT METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY OF PORTLAND, DEPARTMENT OF PUBLIC SERVICES..



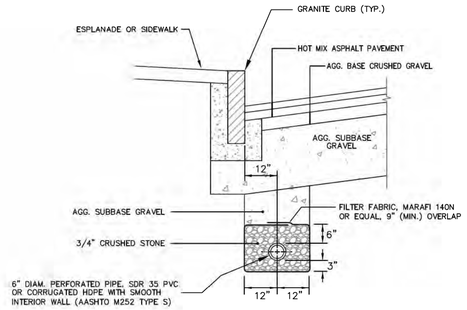
NOTES

1. ALTERNATIVE CONSTRUCTION METHODS OR PAYMENT METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY.
2. 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.
3. 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".
4. 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 FOLLOWING TABLE.

PIPE DIAMETER, D (INCHES)	MAX. TRENCH WIDTH, A (FEET)
4 – – – – –	4.0
6	4.0
8	4.0
10	4.0
12	5.0
15	5.0
18 – – – – –	5.0
21	5.0
24	6.0
27	6.0
30	6.0
36 – – – – –	6.0
42	7.0
48	7.0

TYPICAL PIPE TRENCH INSTALLATION
NOT TO SCALE

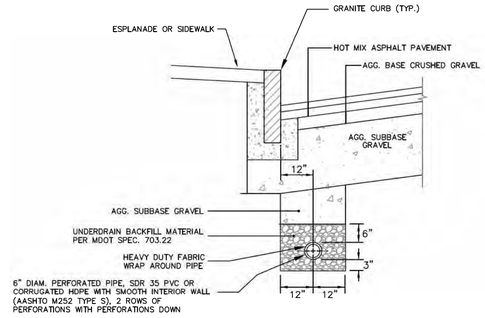
TYPE "B" UNDERDRAIN INSTALLATION ALTERNATIVE A



NOT TO SCALE

NOTES
1. UNDERDRAIN PIPE INVERT ELEVATIONS SHALL BE AT LEAST 42 INCHES BELOW GUTTER GRADES.
2. PERFORATIONS IN UNDERDRAIN PIPE SHALL BE ORIENTED DOWN.

TYPE "B" UNDERDRAIN INSTALLATION ALTERNATIVE B



NOT TO SCALE

NOTES
1. UNDERDRAIN PIPE INVERT ELEVATIONS SHALL BE AT LEAST 42 INCHES BELOW GUTTER GRADES.
2. PERFORATIONS IN UNDERDRAIN PIPE SHALL BE ORIENTED DOWN. THE PIPE SHALL BE FURNISHED WITH A HEAVY DUTY FABRIC WRAP, SUCH AS "FILTER SOCK" BY ADS.

IDEALS

HIGHWAY PLANS

vhb

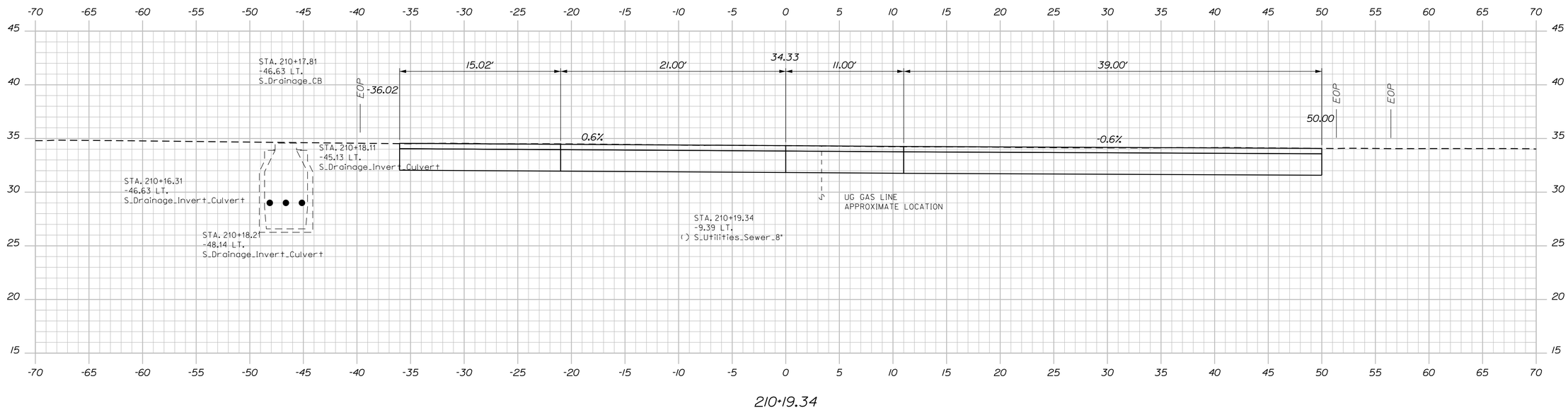
	BY	DATE
PROJ. MANAGER	JENN CONLEY	
DESIGN-DETAILED	AHS	09/2023
CHECKED-REVIEWED	EOF	09/2023
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

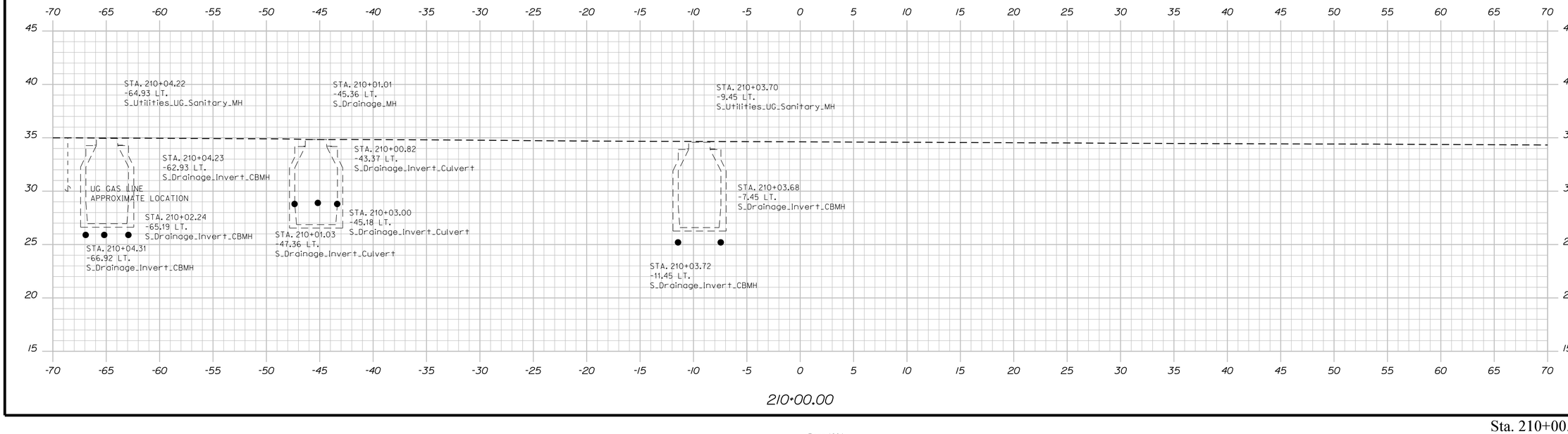
IDEALS - PORTLAND
SHERWOOD STREET

TYPICALS
(6 OF 6)

SHEET NUMBER
8
OF 25

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:3/21/2024





IDEALS

HIGHWAY PLANS

vhb

PROJ. MANAGER	JENN CONLEY		
DESIGN-DETAILED	AHS	SP	09/2023
CHECKED-REVIEWED	ECF	JC	09/2023
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

IDEALS - PORTLAND SHERWOOD STREET

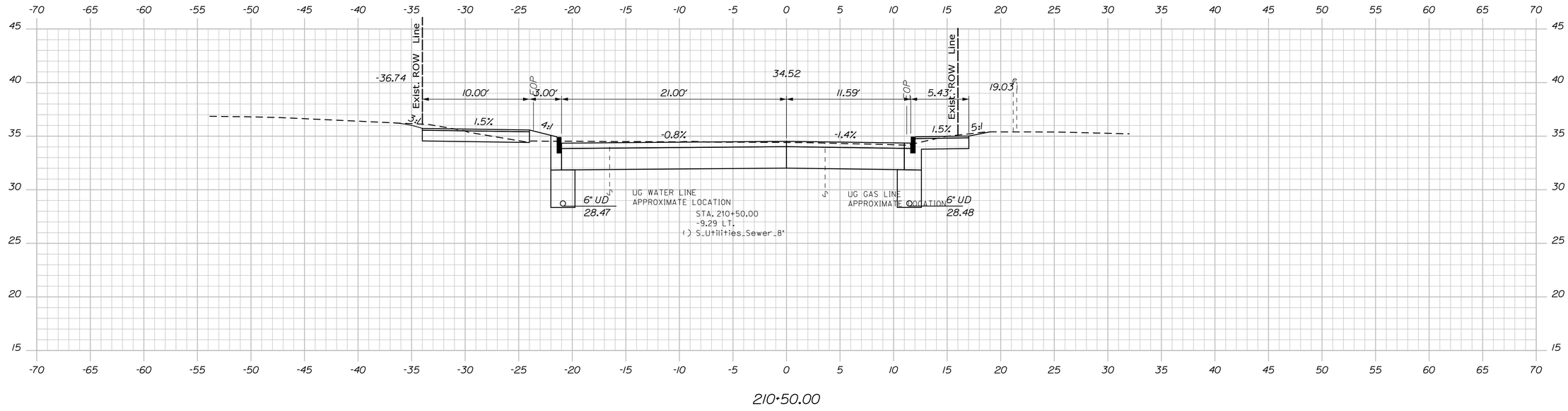
CROSS-SECTIONS (1 OF 17)

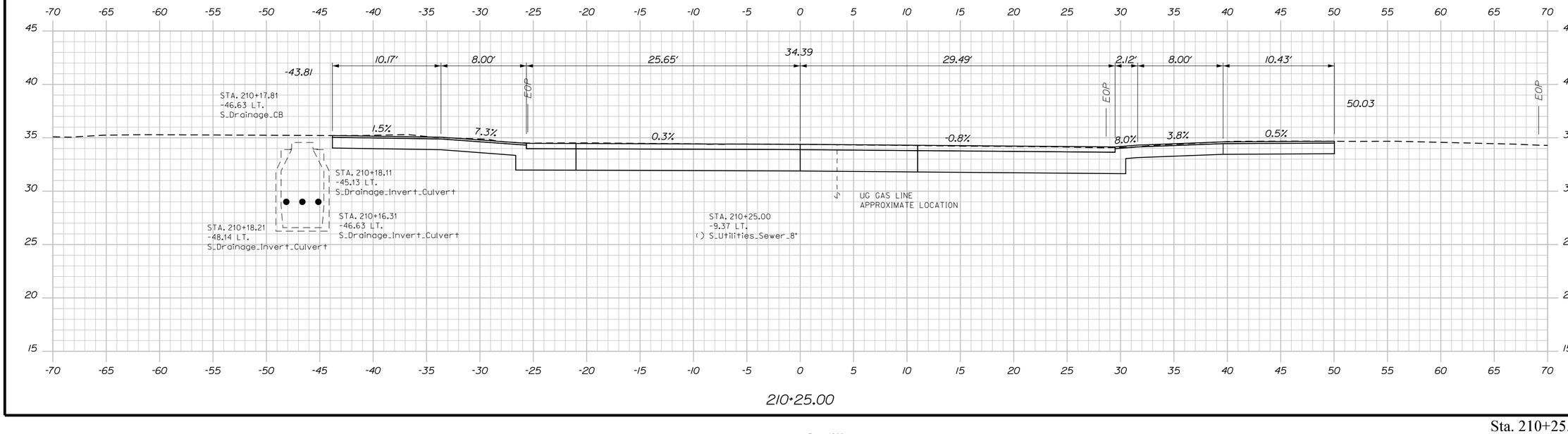
SHEET NUMBER

9

OF 25

Sta. 210+00.00 to Sta. 210+19.34





IDEALS

HIGHWAY PLANS

vhb

	NAME	DATE
PROJ. MANAGER	JENN CONLEY	
DESIGN-DETAILED	AHS	SP 09/2023
CHECKED-REVIEWED	ECF	JC 09/2023
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

IDEALS - PORTLAND
SHERWOOD STREET

CROSS-SECTIONS
(2 OF 17)

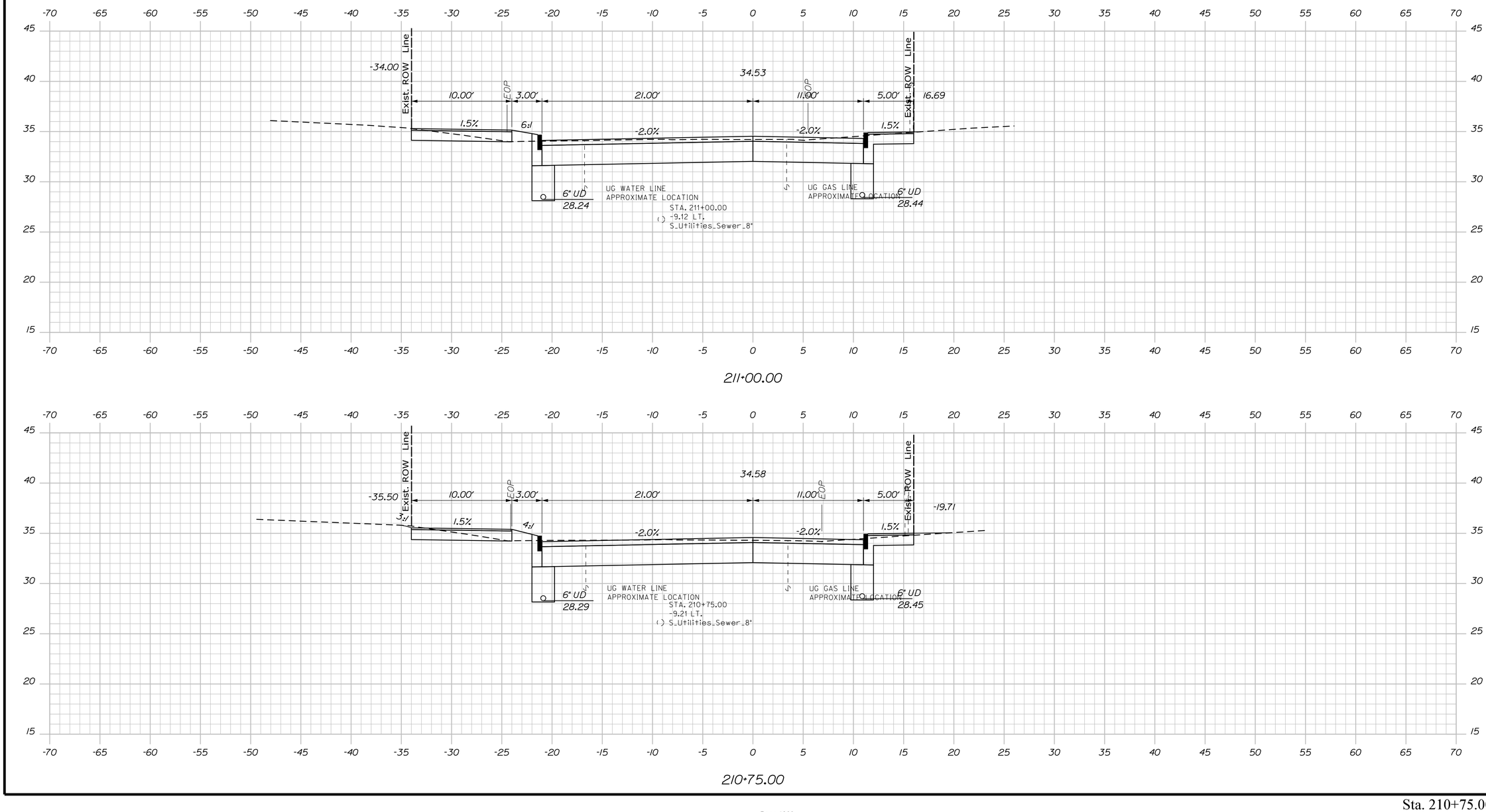
SHEET NUMBER

10

OF 25

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:3/21/2024

Sta. 210+25.00 to Sta. 210+50.00



IDEALS

HIGHWAY PLANS

vhb

PROJ. MANAGER	JENN CONLEY		
DESIGN-DETAILED	AHS	SP	09/2023
CHECKED-REVIEWED	ECF	JC	09/2023
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

IDEALS - PORTLAND SHERWOOD STREET

CROSS-SECTIONS (3 OF 17)

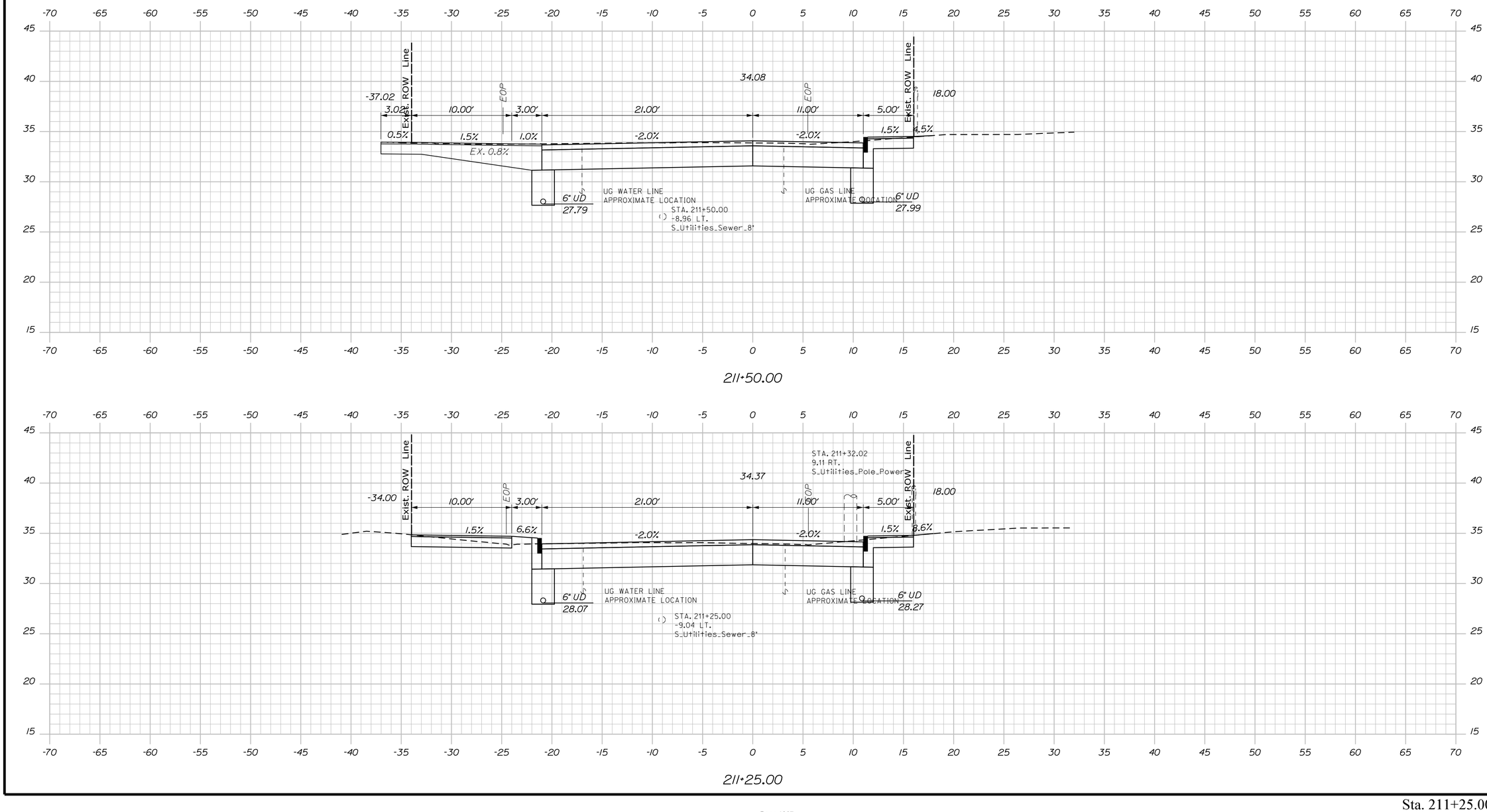
SHEET NUMBER

11

OF 25

Sta. 210+75.00 to Sta. 211+00.00

Filename: ...\000_HDPLAN_Planset_25Scale.DGN Division: HIGHWAY Username: asiegel Date:3/21/2024



IDEALS

HIGHWAY PLANS

vhb

PROJ. MANAGER	JENN CONLEY		
DESIGN-DETAILED	AHS	SP	09/2023
CHECKED-REVIEWED	ECF	JC	09/2023
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

IDEALS - PORTLAND SHERWOOD STREET

CROSS-SECTIONS (4 OF 17)

SHEET NUMBER

12

OF 25

Sta. 211+25.00 to Sta. 211+50.00

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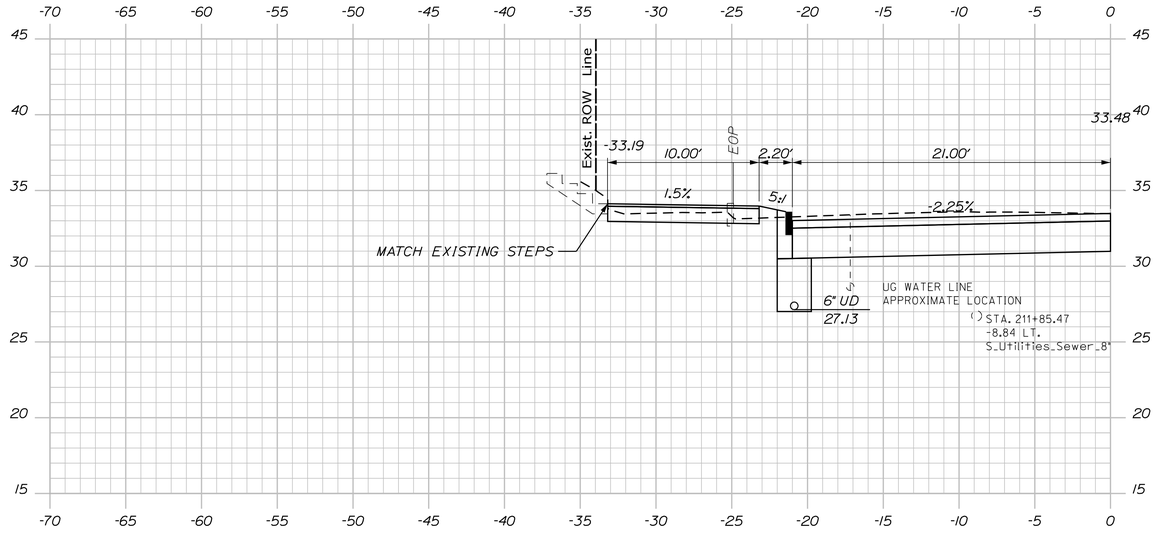

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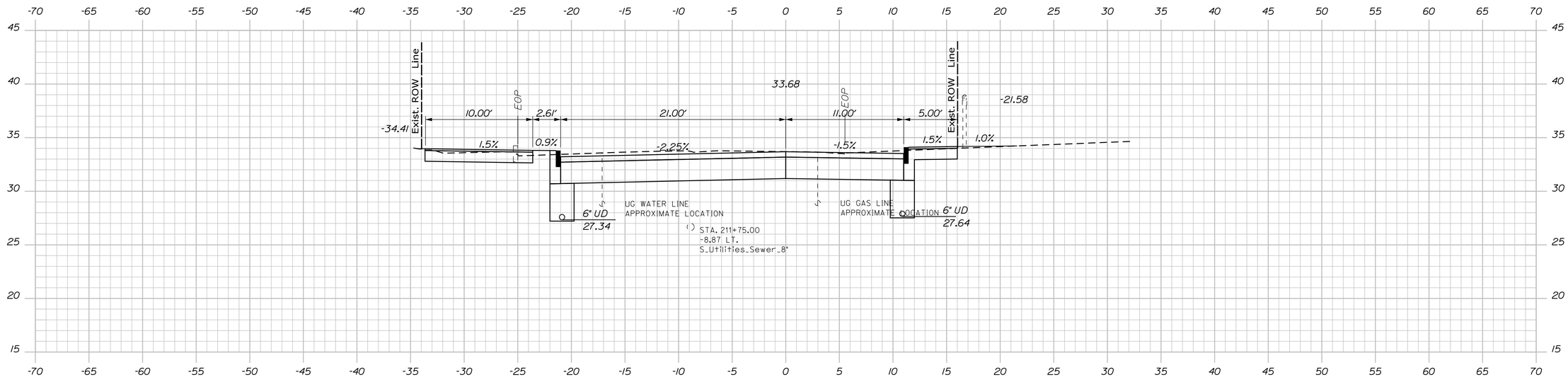

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IDEALS - PORTLAND
SHERWOOD STREET

CROSS-SECTIONS
(5 OF 17)

SHEET NUMBER

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OF 25

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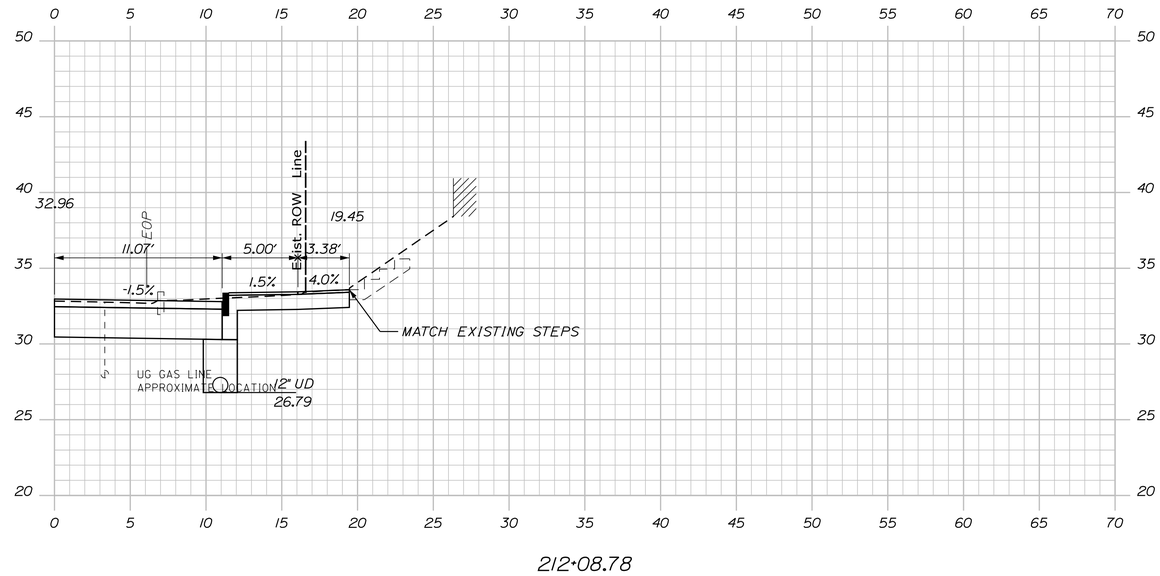

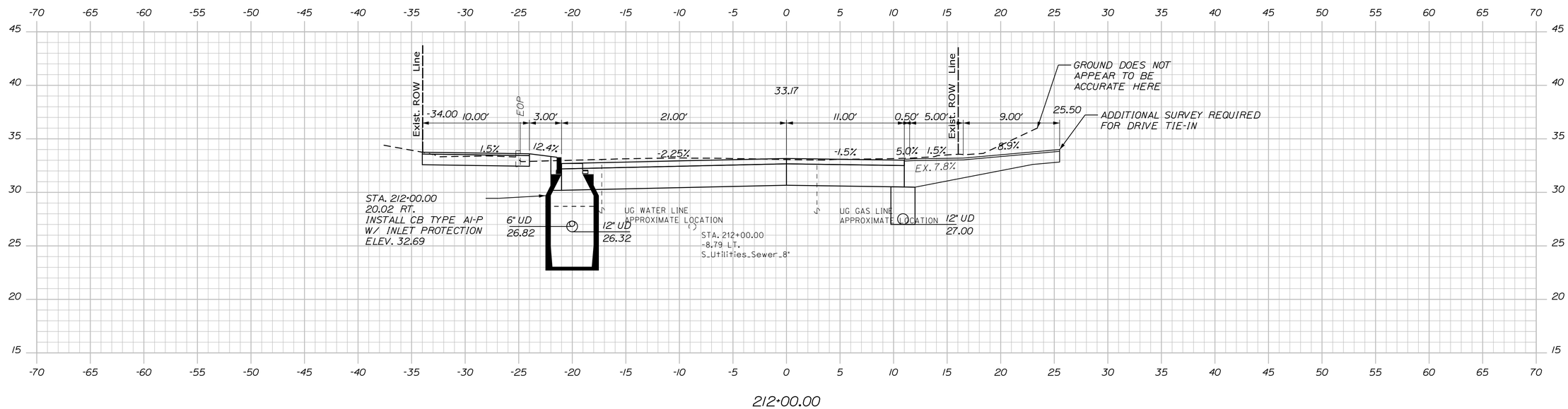

IDEALS

HIGHWAY PLANS

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FIELD CHANGES			

IDEALS - PORTLAND SHERWOOD STREET

CROSS-SECTIONS (6 OF 17)

SHEET NUMBER

14

OF 25

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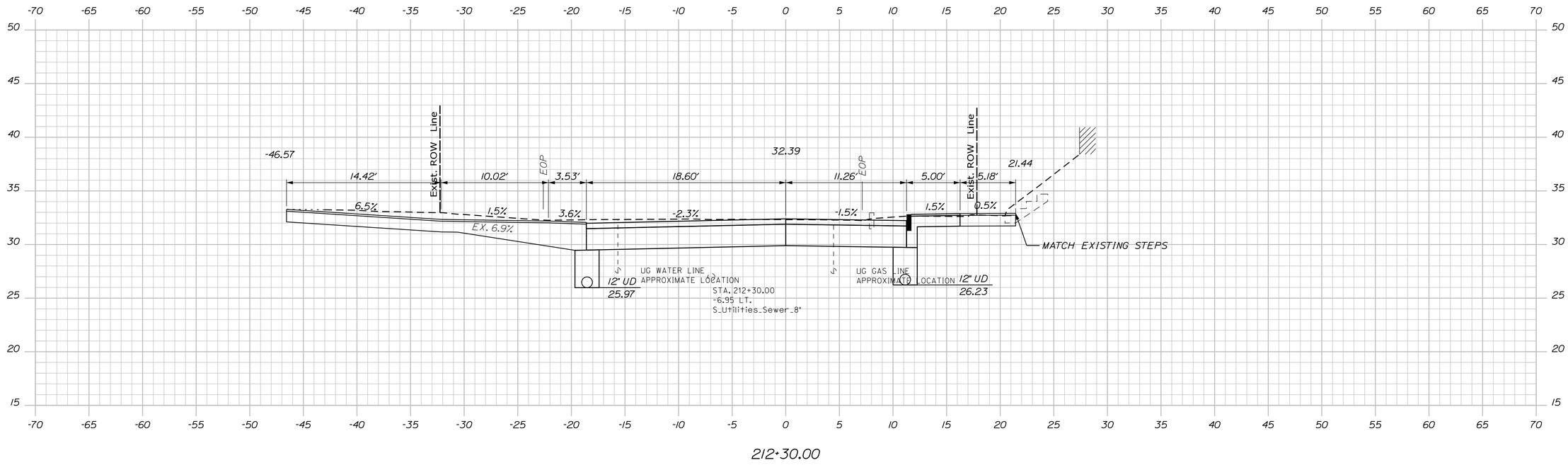

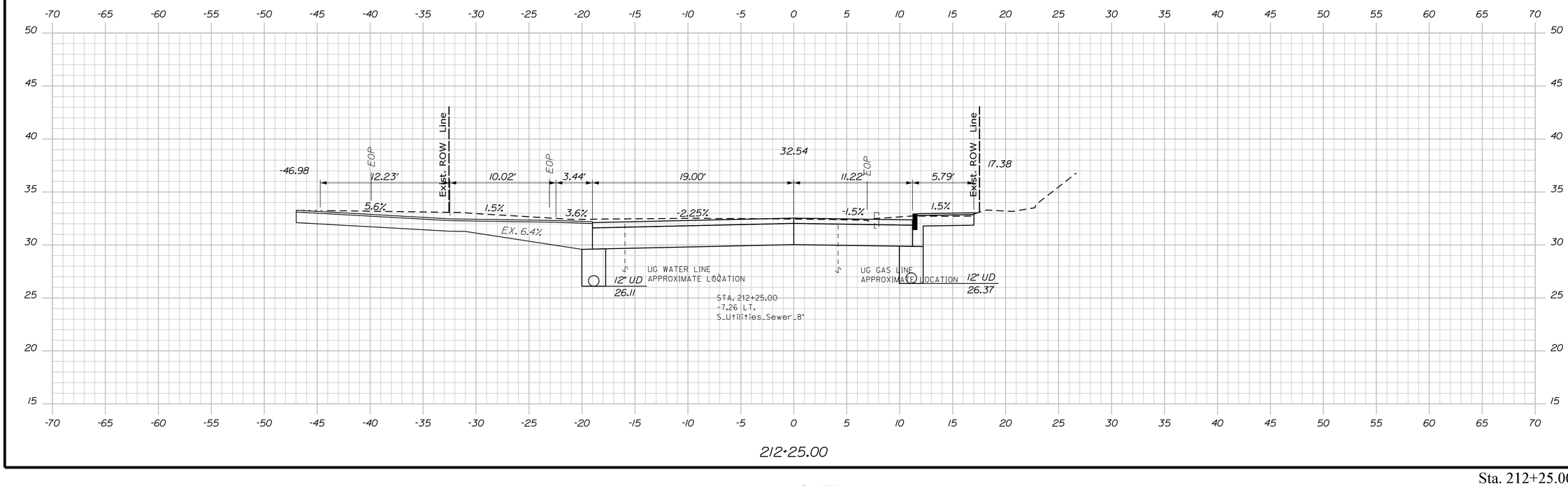

IDEALS

HIGHWAY PLANS

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IDEALS - PORTLAND SHERWOOD STREET

CROSS-SECTIONS (7 OF 17)

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OF 25

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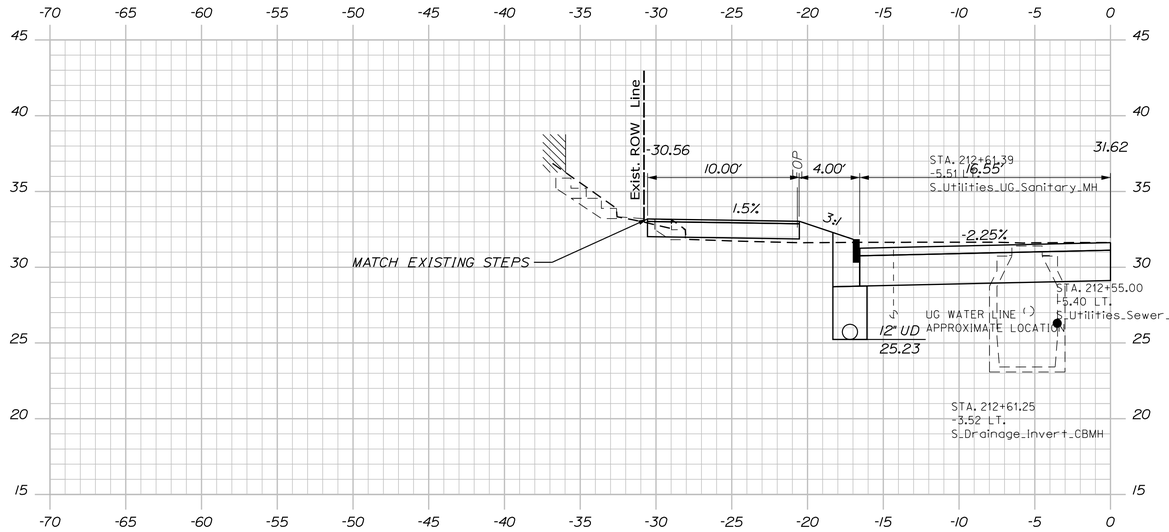

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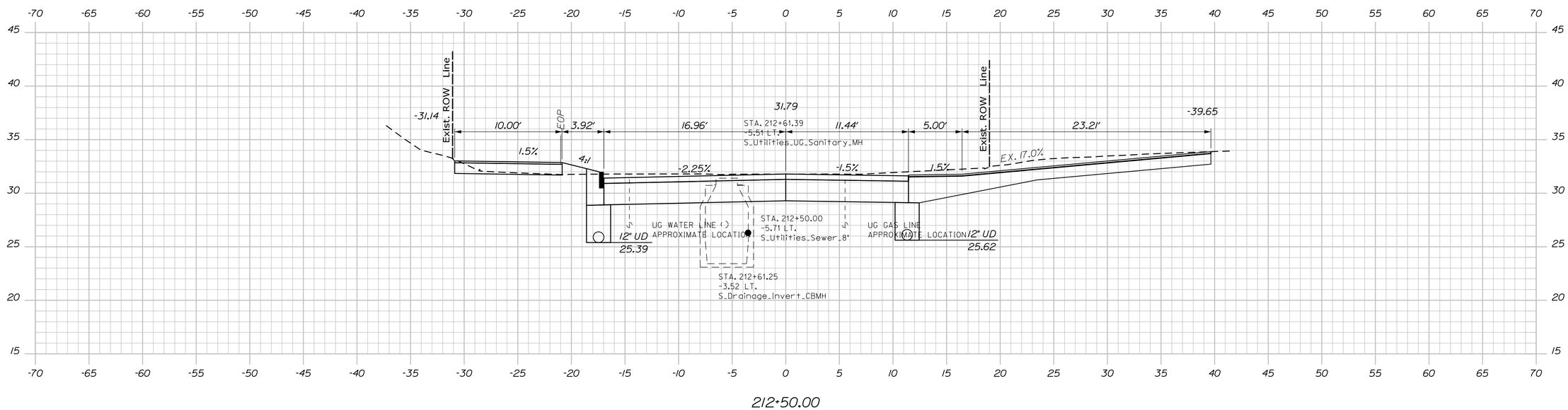

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IDEALS - PORTLAND
SHERWOOD STREET

CROSS-SECTIONS
(8 OF 17)

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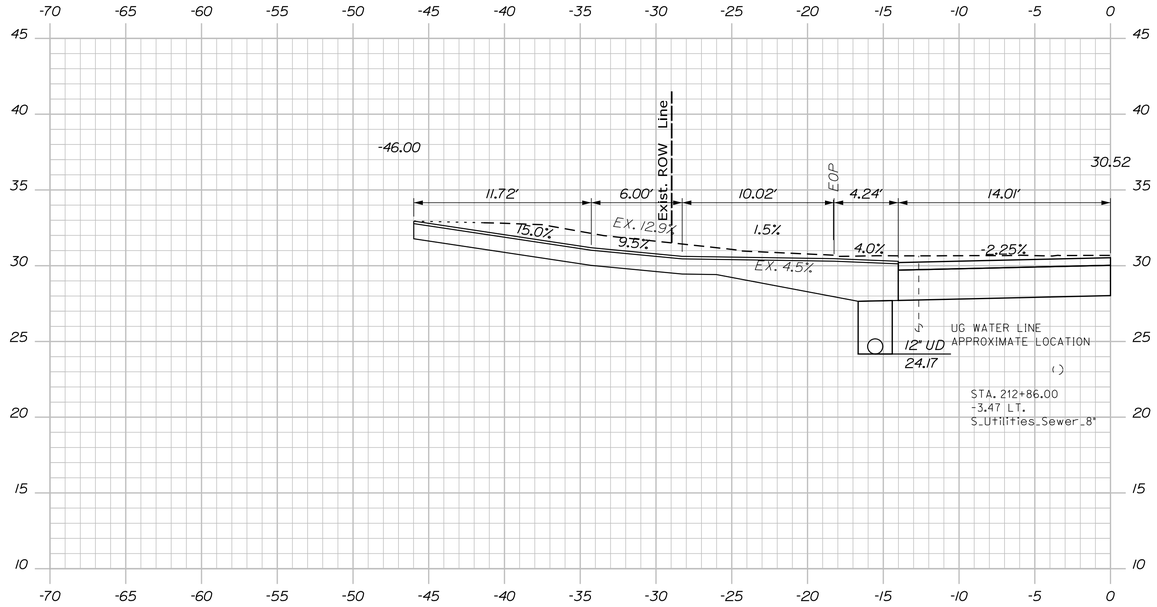

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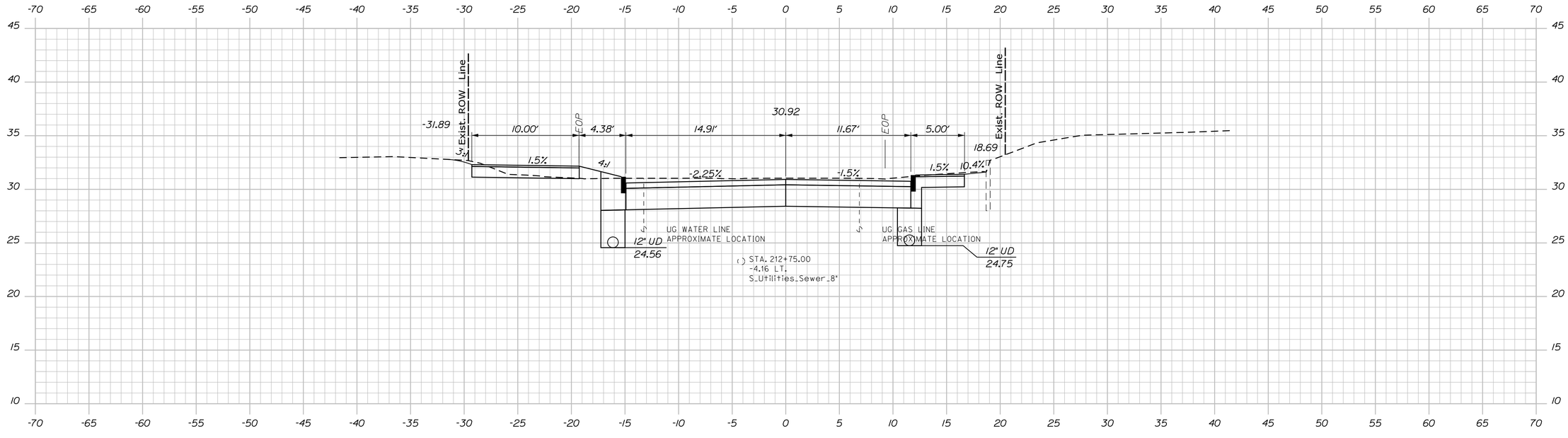

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IDEALS

HIGHWAY PLANS

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IDEALS - PORTLAND
SHERWOOD STREET

CROSS-SECTIONS
(9 OF 17)

SHEET NUMBER

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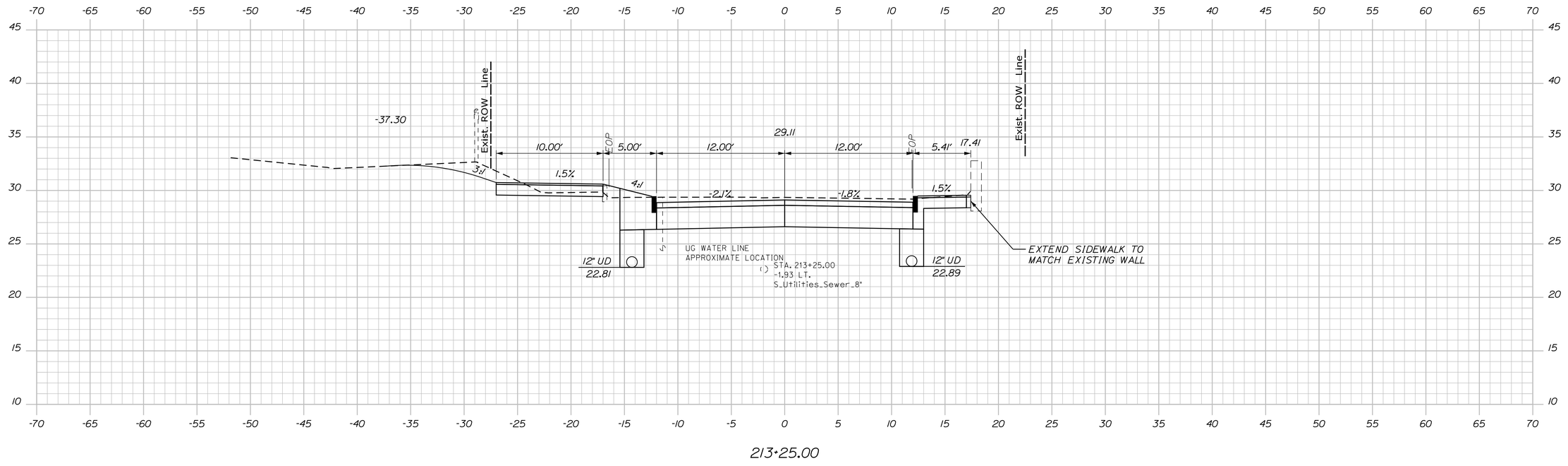

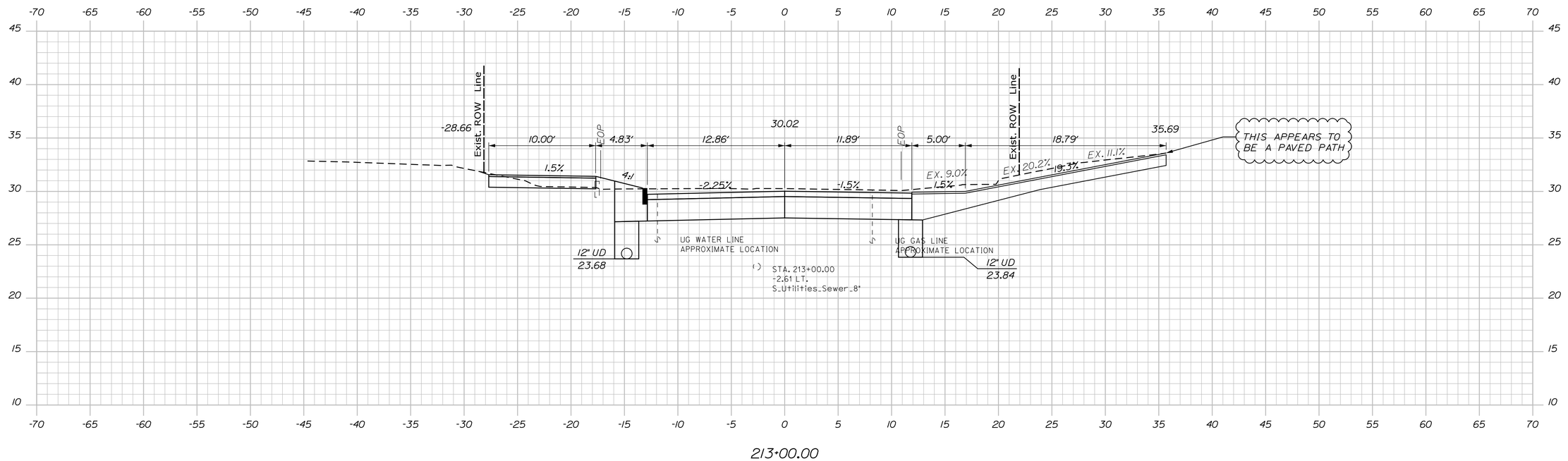

IDEALS

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IDEALS - PORTLAND SHERWOOD STREET

CROSS-SECTIONS (10 OF 17)

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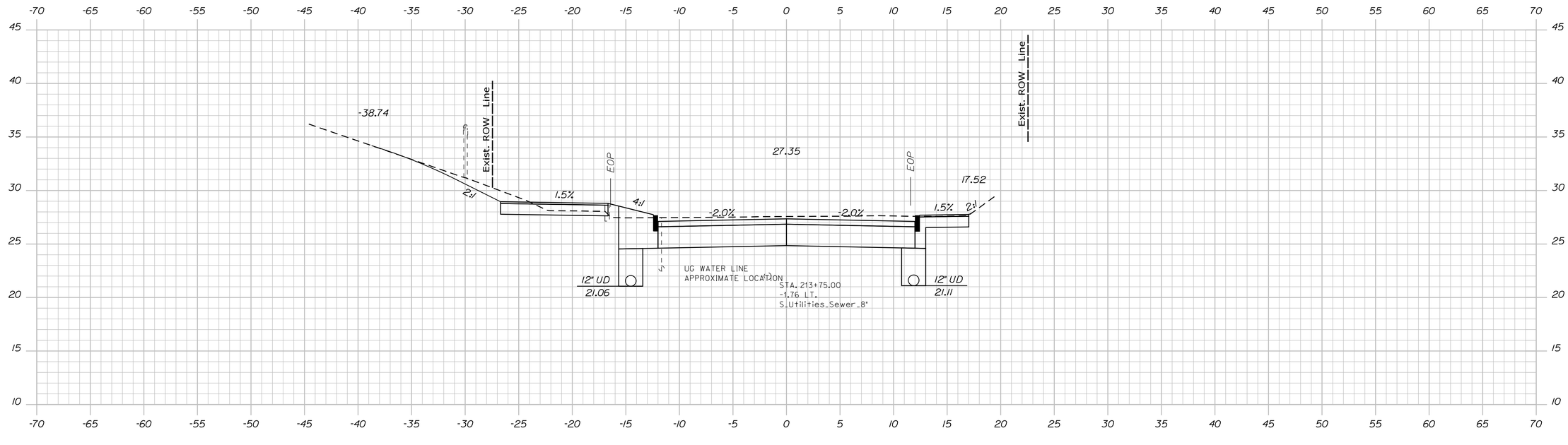

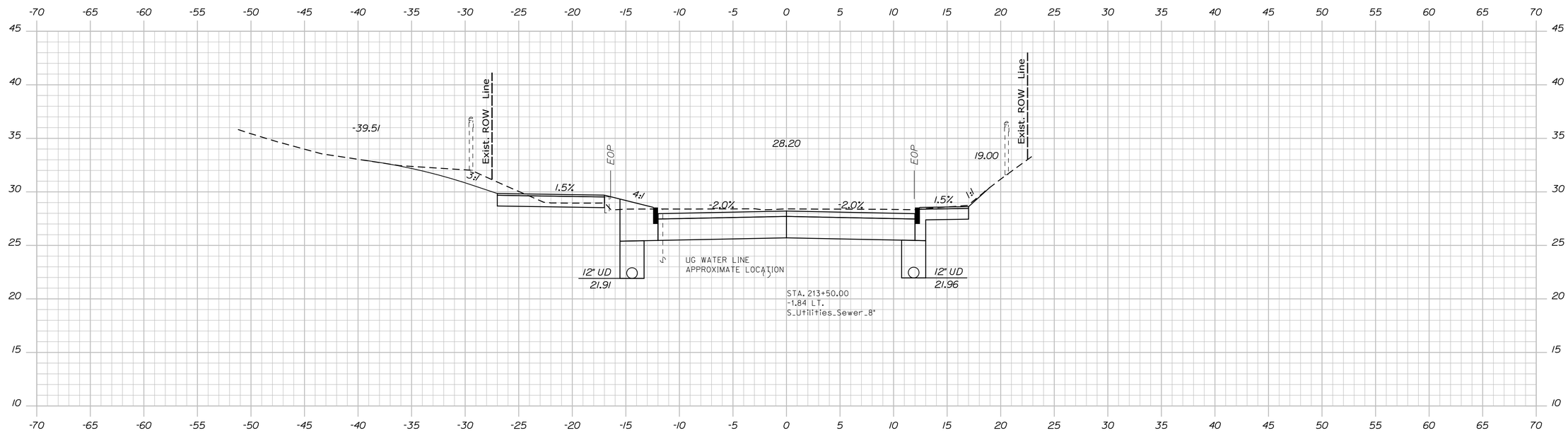

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IDEALS - PORTLAND
SHERWOOD STREET

CROSS-SECTIONS
(11 OF 17)

SHEET NUMBER

19

OF 25

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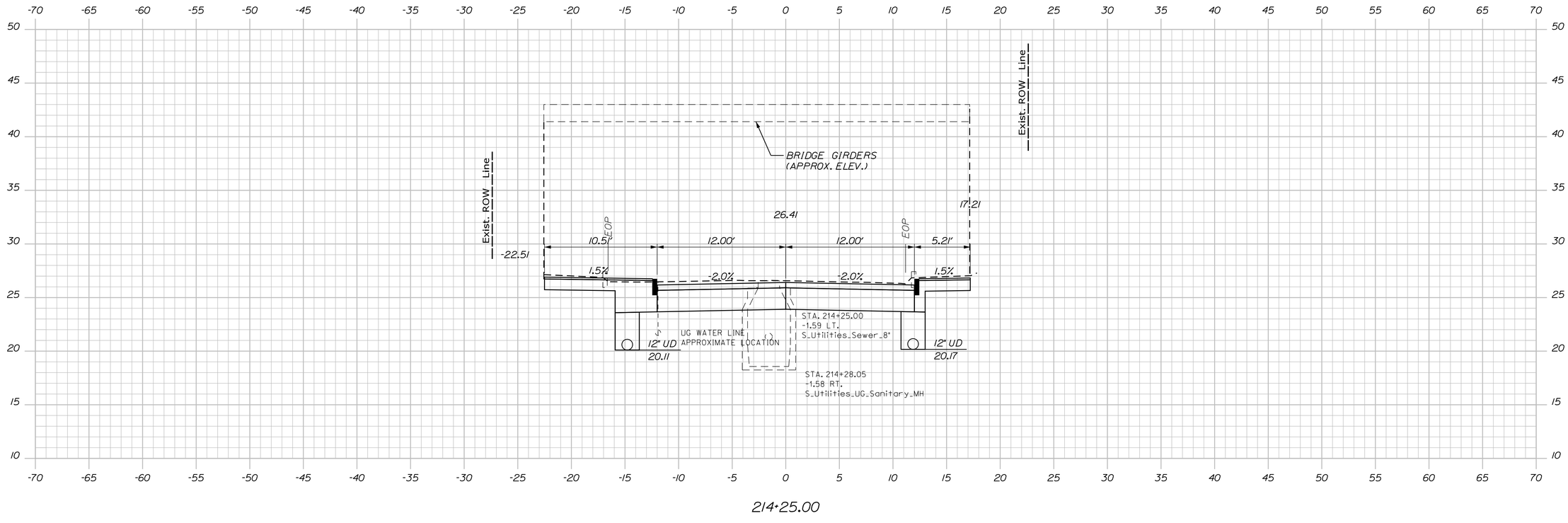

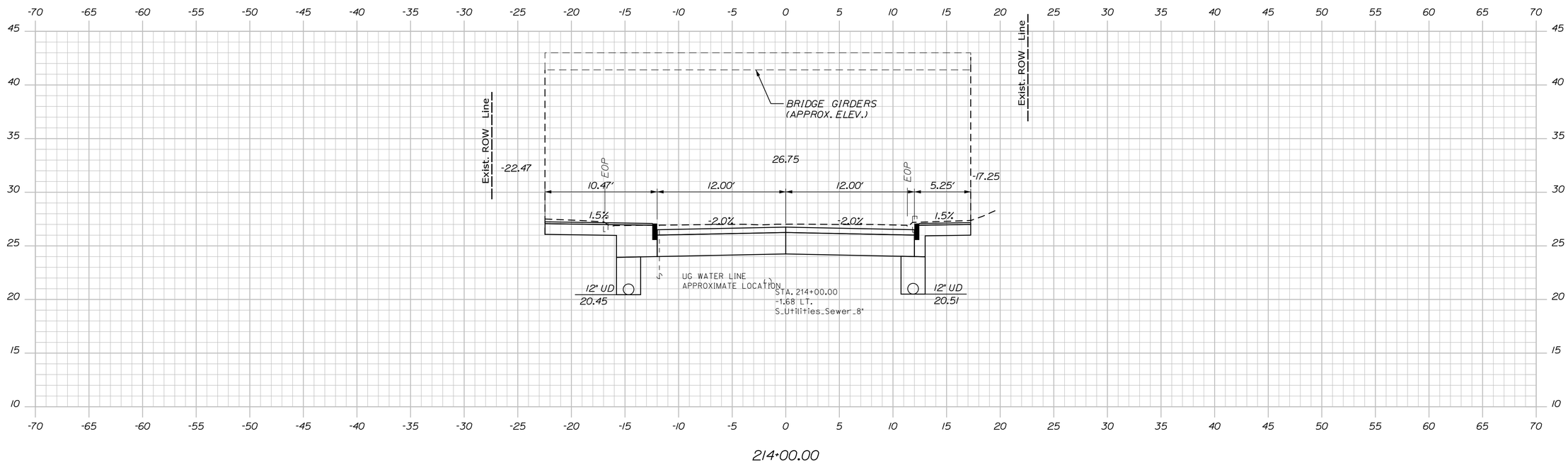

IDEALS

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IDEALS - PORTLAND SHERWOOD STREET

CROSS-SECTIONS (12 OF 17)

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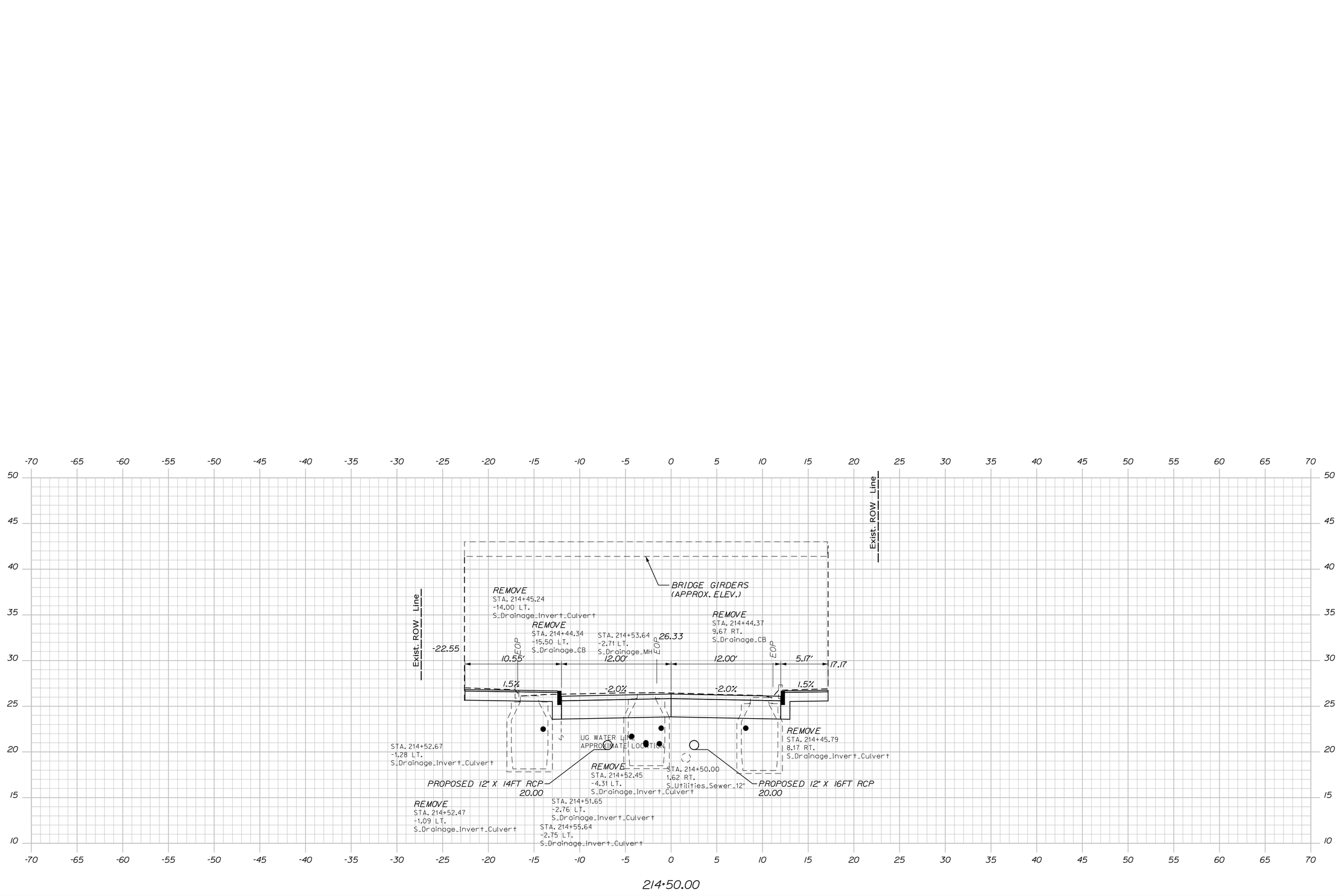

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CROSS-SECTIONS (13 OF 17)

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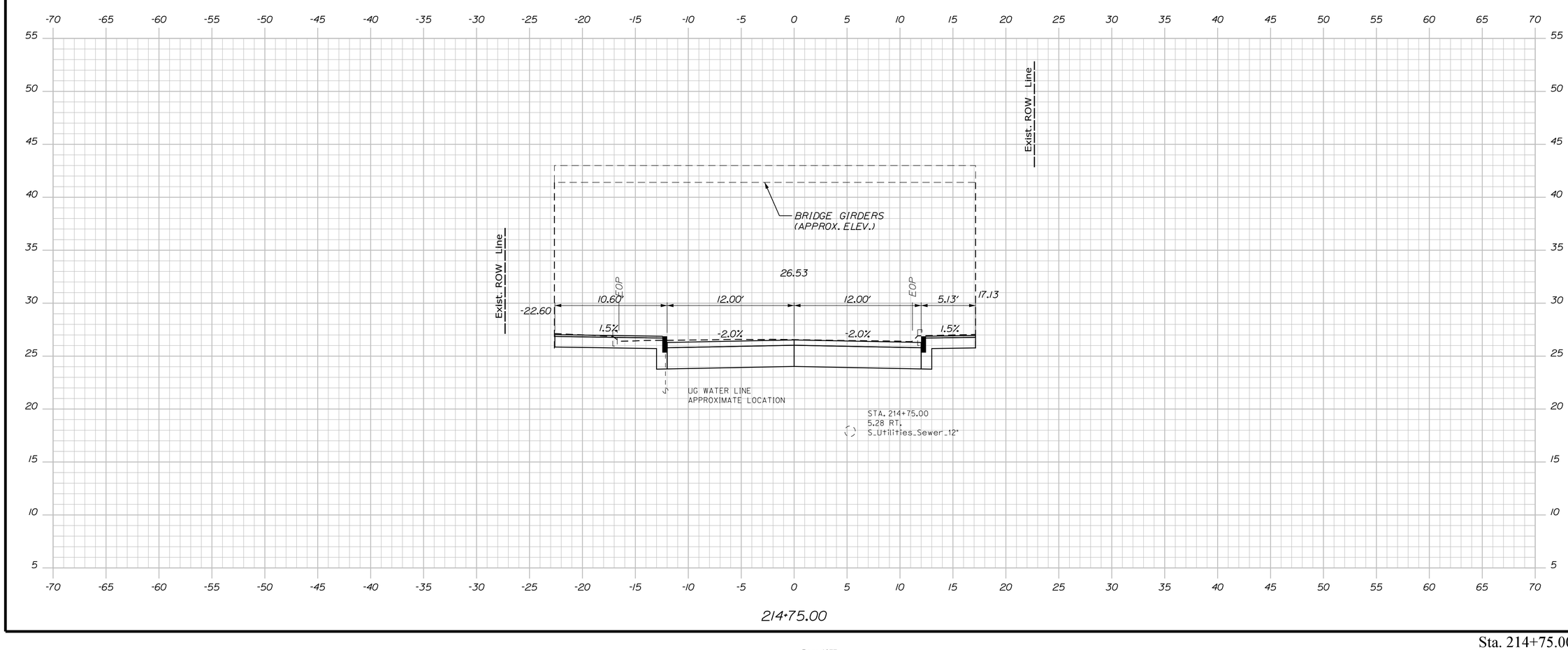

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IDEALS - PORTLAND
SHERWOOD STREET

CROSS-SECTIONS
(14 OF 17)

SHEET NUMBER

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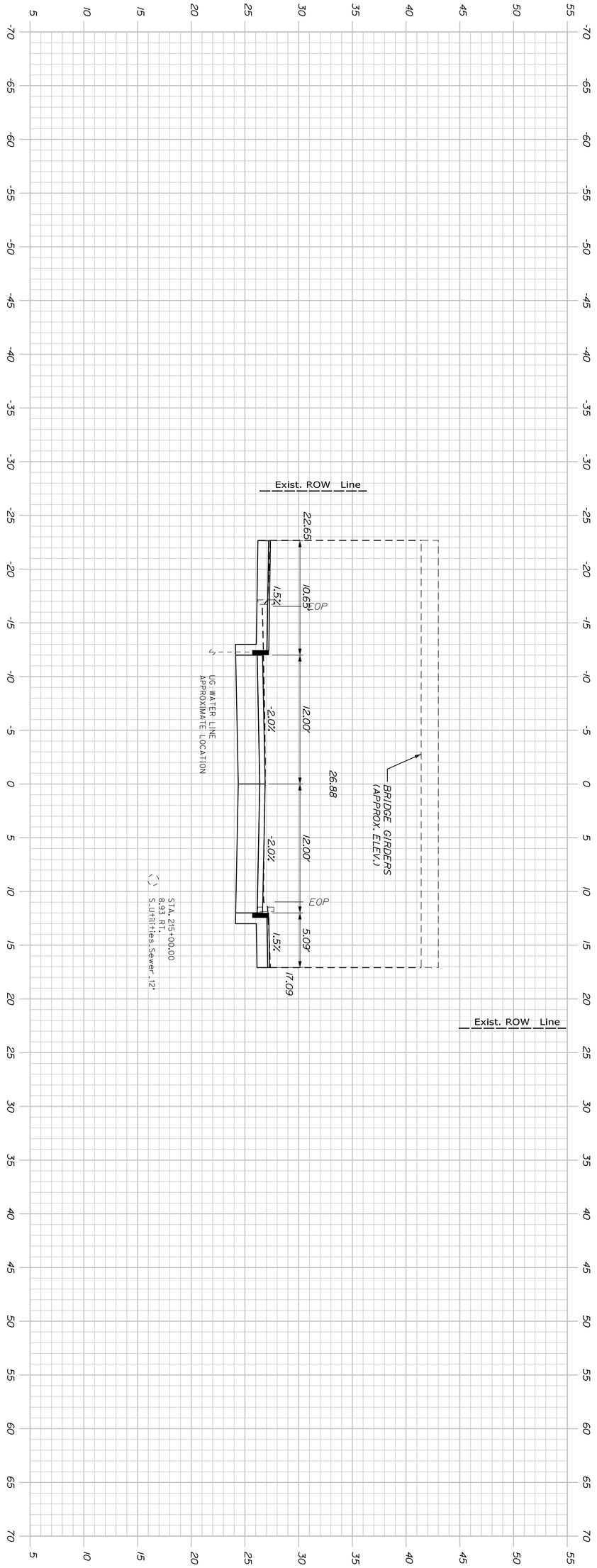

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IDEALS - PORTLAND SHERWOOD STREET

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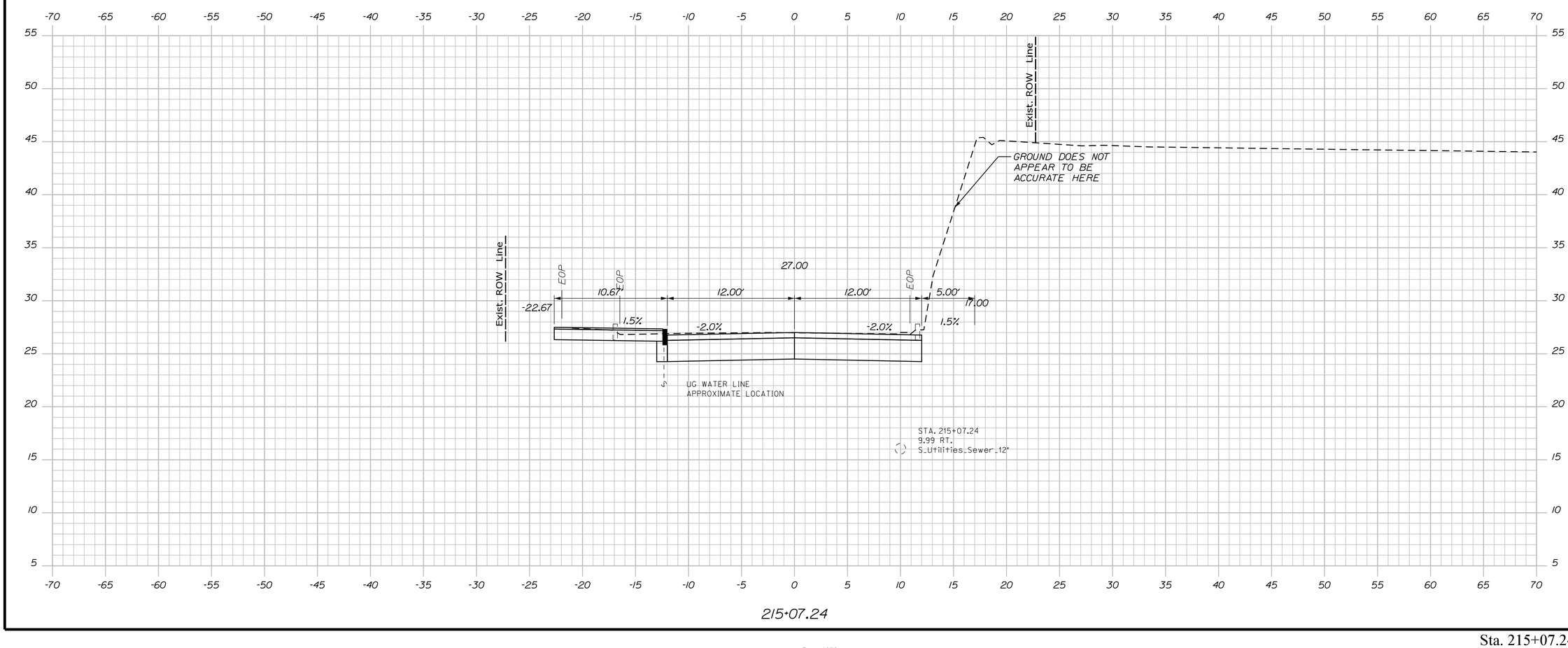

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IDEALS - PORTLAND
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CROSS-SECTIONS
(16 OF 17)

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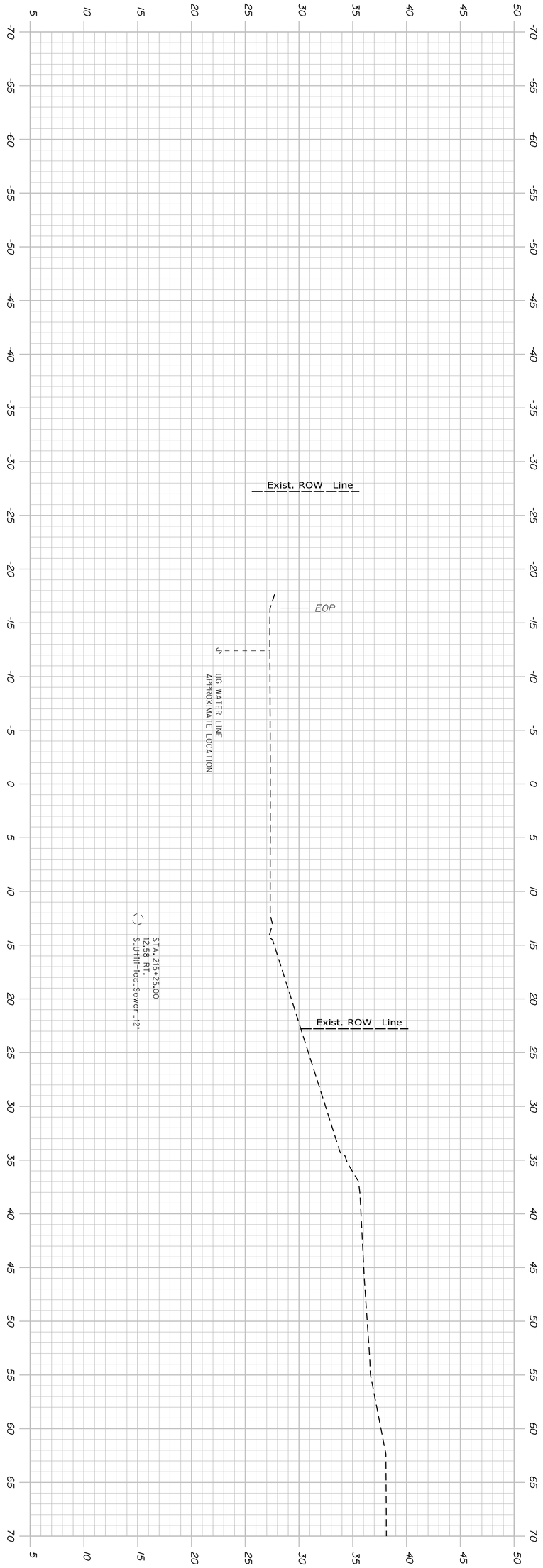

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CROSS-SECTIONS (17 OF 17)

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HIGHWAY PLANS

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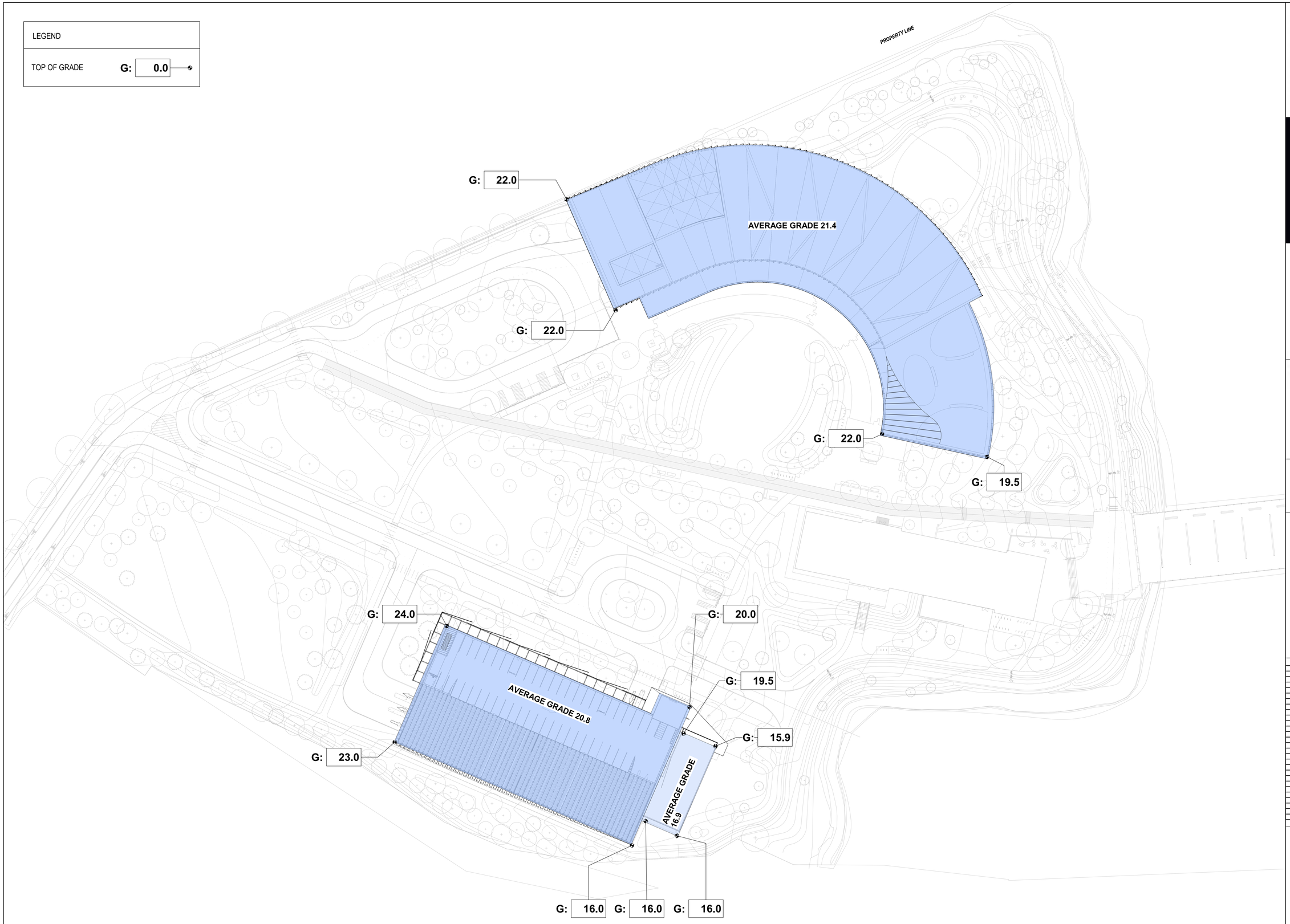

IDEALS
Initiative for Digital Engineering and Life Sciences
Roux Campus

LVX VERITAS VIRTVS
The Roux Institute

CambridgeSeven
Architects and Planners
1050 Massachusetts Avenue
Cambridge, MA 02138
617 492-7000 Fax 492-7007

LAND-USE PERMIT SET

Number	Revision	Date

LICENSED ARCHITECT
TIMOTHY D. MANSFIELD
NO. 3838
STATE OF MAINE
Stamp 10/27/2023

Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	SB Checked CM
Date	27 OCTOBER 2023
Scale	1" = 30'-0"

Drawing Title
AVERAGE GRADE DIAGRAM

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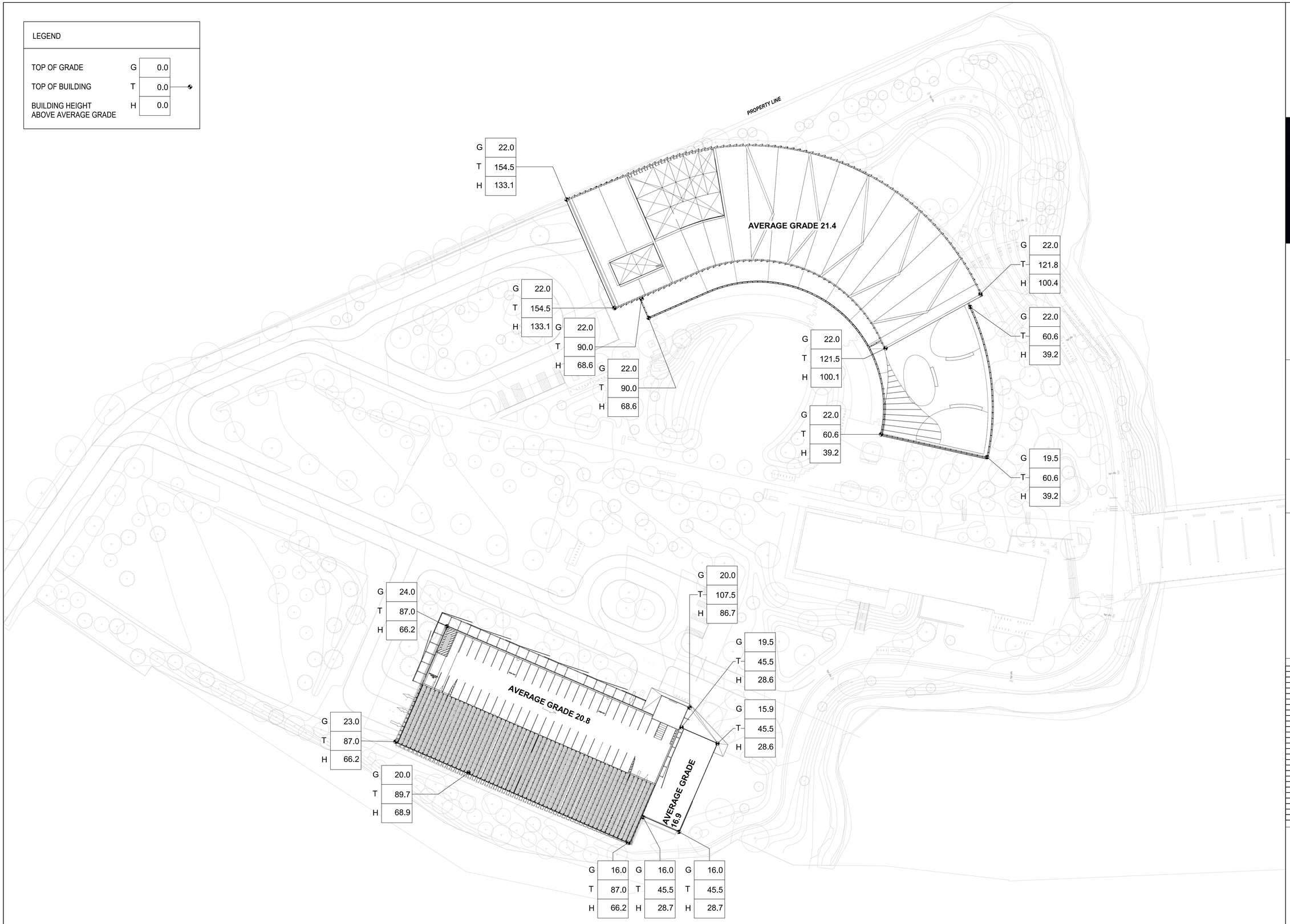

IDEALS
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Job #	2202
Project	THE ROUX INSTITUTE
Drawn By	SB
Checked	CM
Date	27 OCTOBER 2023
Scale	1" = 30'-0"

Drawing Title
BUILDING HEIGHT DIAGRAM

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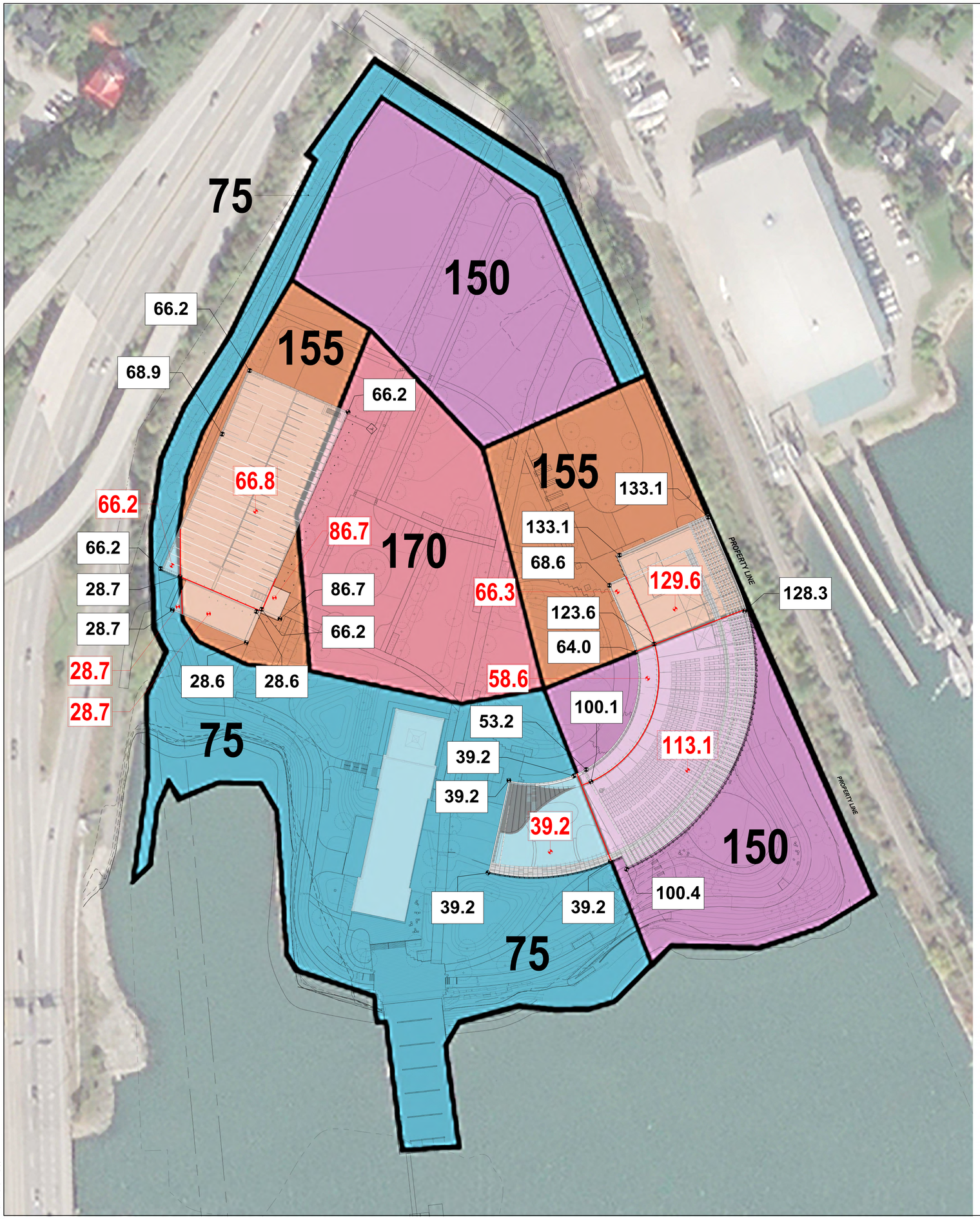

LEGEND

128.3

BUILDING HEIGHT ABOVE AVERAGE GRADE

66.3

AVERAGE BUILDING HEIGHT ABOVE AVERAGE GRADE PER HEIGHT ZONE

BUILDING HEIGHTS THAT SPAN TWO OR MORE HEIGHT ZONES ARE MEASURED BY CALCULATING THE HIGHEST POINT OF THAT PORTION OF THE BUILDING WITHIN A PARTICULAR HEIGHT ZONE. IF THE ROOF IS SLOPED, HEIGHT IS MEASURED AT THE MIDPOINT OF ALL SLOPES LOCATED WITHIN THE PARTICULAR HEIGHT ZONE.

IDEALS
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Roux Campus

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Drawn By	SB
Checked	CM
Date	27 OCTOBER 2023
Scale	1" = 40'-0"

Drawing Title
BUILDING HEIGHT MAP DIAGRAM

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SOUTH ENTRANCE

To:	Chair Brandon Mazer & Members of the Planning Board
From:	Eric Freeman
Date:	April 16, 2024
Re:	1060 Westbrook Street.
Project ID:	PL-002815-2024, CU-002828-2024
CBL:	CBL 207 A012
Meeting Date:	April 23, 2024

I. INTRODUCTION

Giri Hotel Management has submitted a Major Site Plan application to construct a three-story, 120-room Hyatt Studios hotel with 106 parking spaces and associated site improvements located at 1060 Westbrook Street in the Airport Business (A-B) zone. 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.

The Planning and Urban Development Department mailed 68 notices advertising this meeting to property owners within 500 feet of the site. A legal advertisement ran in the April 11 and April 12 editions of the Portland Press Herald.

Applicant: Giri Hotel Management
Applicant Representatives: Acorn Engineering



Figure 1: Front elevation of the proposed building

REQUIRED REVIEWS

Review	*Applicable Standards*
Site Plan	Section 14.6

PROJECT DATA

Existing Zoning	A-B Airport Business
Property Size	175,560 SF
Existing Use	Undeveloped.
Proposed Development Program	Three-story, 120-room Hyatt Studios Hotel with 106 surface parking spaces.

II. EXISTING CONDITIONS AND SURROUNDING AREA

The existing 4.03 acre site is located at the intersection of Westbrook Street and Jetport Boulevard across from the existing Embassy Suites hotel and rental car return facilities. The site is currently undeveloped and consists of grassed open space and tree cover. There is a drainage and detention easement at the northeast corner of the property which will not be impacted by the proposed building and site improvements.



Figure 2: The existing site

III. PROPOSED DEVELOPMENT

The proposed development involves the construction of a three-story, 120-room extended stay hotel with 106 surface parking spaces. The ground floor of the hotel includes a lobby and reception area alongside laundry and back-of-house services, and each hotel room features kitchen amenities. On-site parking includes 106-spaces intended for short and long-term parking for guests and employees. Parking areas would feature landscaping and pole-mounted lighting fixtures. This proposal also involves reconfiguration of the intersection at Westbrook Street and Jetport Boulevard into a four-way stop. This change would allow the proposed driveway to the hotel to directly connect at the intersection of Westbrook St. and Jetport Blvd. As part of the reconfiguration of the intersection, pedestrian crosswalks would also be installed

Elevation changes on the western side of the site would be accounted for by a retaining wall which would wrap around the western and northern edges of the proposed hotel.

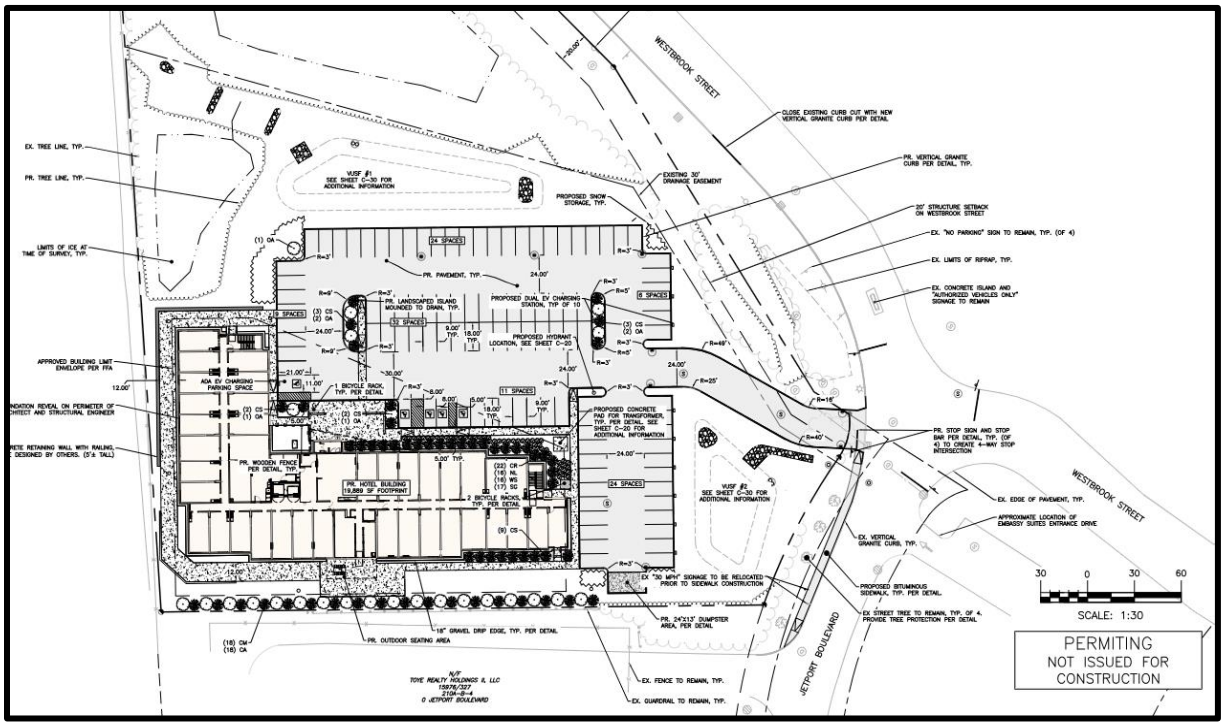


Figure 3: Site Plan

IV. RIGHT, TITLE, & INTEREST

The applicant has demonstrated sufficient right, title and interest to the parcel involved in this application. The applicant has also provided right, title and interest documentation related to the drainage and detention easement located on the northeast corner of the parcel.

Full Right, Title and Interest documentation is included as Attachment D.

V. FINANCIAL & TECHNICAL CAPACITY

The project will be developed and financed by Giri Hotel Management LLC. The applicant has provided a statement of financial capacity from Kennebunk Savings Bank. (Attachment G).

Acorn Engineering and Mussachio Architects have demonstrated capacity and experience working on commercial projects of a similar scale.
(Attachment H)

VI. ZONING ANALYSIS

The subject properties lie within the Airport Business (A-B) The proposed use is a use that is permitted by right within the A-B zone. Relevant sections of the R-P purpose statements include:

- A-B: *To provide an area for the development of airport-related enterprises. Appropriate uses permitted in this zone are those customarily associated with the operation of the airport terminal and individual airlines and accessory uses to provide for the comfort and convenience of the airport's patrons and employees.*

	Required	Proposed
Lot Size	20,000 SF	175,560 SF
Minimum Street Frontage (%)	50 ft.	813 ft.
Front Yard Minimum	20 ft.	132 ft.
Maximum Impervious Area	70%	38.7%
Maximum Height	45 ft.	37.7 ft.
Off-street parking spaces	30	106

Inclusionary zoning (Section 18.2)

The proposed development has been reviewed by Staff for conformance with the relevant review standards of Section 18.2.5 of the Land Use Code related to the City's Inclusionary Zoning requirements for hotel projects:

The Inclusionary Zoning Workforce Housing Agreement requires All hotel projects to provide one unit of low-income housing for rent in the City of Portland for every 28 guest rooms in the hotel project. Based on the number of proposed hotel rooms, this project would be required to provide five affordable housing units on-site.

As an alternative to providing workforce housing units, projects may pay a fee-in- lieu of $4,962 per hotel guest room. In-lieu fees shall be paid into the Housing Trust Fund.

The applicant has chosen to pay a fee-in-lieu. The total fee in-lieu for this application is $563,040

Staff Finding: The proposed development has been reviewed by Staff for conformance with this standard, and consider this standard to be met

VII. SITE PLAN 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

This application involves reconfiguration of the intersection at Westbrook St. and Jetport Blvd into a four-way stop to allow the proposed hotel driveway to directly connect to the new intersection. This project is not anticipated to generate more than 100 vehicle trips during peak hours and therefore a Traffic Movement Permit is not required. The applicant has provided a Traffic Impact Study.

Staff finding: Met

B. Access and circulation

Access to the site is provided via a 24-foot driveway connecting to the intersection of Westbrook St. and Jetport Blvd. Internal circulation within the parking area is provided by 24-foot drive aisles. The applicant proposes to install a new pedestrian connection from the building to the existing sidewalk on Westbrook street. A new crosswalk will be installed at the new four-way stop allowing pedestrians to cross Westbrook Street. This new sidewalk will allow pedestrian connectivity between the hotel and the Jetport terminal. New bituminous sidewalk will also be installed between the hotel driveway and the entrance to the rental car return facility, creating a direct connection to the existing sidewalk on Jetport Blvd.

Staff finding: The applicant has addressed outstanding comments from staff and peer reviewers related to site access. These changes will be reflected in future plans.

C. Public transit access
This standard is not applicable to this application.

Staff finding: Not applicable.

D. Parking
This application proposes 106 surface parking spaces which is 76 spaces above what is required per Table 19A of the Land Use Code. The surplus of proposed parking is intended to accommodate both short-term parking by hotel guests and employees and long-term "park and fly" patrons. The applicant proposes six bicycle parking spaces and 21 level-two EV charging stations.

Staff finding: The applicant will need to provide 17 additional bicycle stalls to meet bicycle parking standards laid out in Table 19-A of the Land Use Code. If the applicant is unable to provide additional on-site bicycle parking they will need to formally request a waiver of the bicycle parking standard. The applicant has provided a sufficient number of Electric Vehicle charging stations.

E. Transportation demand management (TDM)
A TDM plan prepared by VHB has been included with this application. Planned TDM strategies include:
- A free hotel shuttle to the Jetport terminal
- Bicycle parking for staff
- On-site showers and lockers for staff who bike to work
- Improved pedestrian access to the site
- Proximity to an existing stop on METRO Route 5

The applicant will be responsible for monitoring and reporting the effectiveness of implemented TDM strategies by May 15th of each year.

Staff finding: Full comments from the City's Transportation Program Manager are available as attachment A1.

2. Environmental Quality Standards (Section 14.6.2)

A. Preservation of significant natural features
The current site is undeveloped and consists of a cleared area covered by grass and low shrubs and several on-site trees located primarily at the front and sides of the parcel. The applicant has not submitted a full tree inventory and are currently investigating the quantity of trees 10 inches DBH or greater located within the limits of construction.

Staff finding: Once the tree inventory is provided, staff will review the submission to ensure that no significant natural features, as defined in Sec. 14.6.2 are to be removed or disturbed as part of this development. Staff will provide an updated finding related to this standard as part of the Public

Hearing report.

B. Landscape preservation

Given the location of the building and parking facilities it is anticipated that a minimum of 30% of the trees 10 inches or greater will be preserved, but final tree removal and landscape preservation plans will need to be submitted.

Staff finding: Once the tree inventory is provided, staff will review the submission to ensure that a minimum of 30% of trees 10 inches DBH or greater, are preserved within required setback areas, and that the applicant has satisfactorily incorporated significant trees within their site design. Staff will provide an updated finding related to this standard as part of the Public Hearing report.

C. Site landscaping and buffers

This application proposes 24 trees and approximately 55 shrubs to be located throughout the site. Four existing street trees will be preserved and two will be removed due to utility conflicts. The applicant will need to detail the location and variety of proposed plantings.

Staff finding: The applicant has been asked to provide an updated site landscaping plan, that demonstrates compliance with this review standard, as well as the supplemental technical standards in Section 4 of the Technical Manual. Based upon the property's frontage, the applicant will be required to provide a minimum of 23 street trees (one tree per every 35 feet of street frontage) and 27 shade trees or planting equivalent (one shade tree or planting equivalent per every 30 feet of street frontage). The development is further required to provide a minimum of 42 parking lot trees or parking lot tree equivalent based upon the proposal to create 106 new off-street parking spaces (two trees or one tree and three shrubs per every five parking spaces). This vegetation is required to be interspersed throughout the proposed parking area in landscaped islands to help screen, shade and break up contiguous areas of parking. As part of any future submission, staff will also be confirming that proposed landscaping satisfies required buffering and screening requirements. Staff will provide an updated finding related to this standard as part of the Public Hearing report.



Figure 4: Elevations

D. Water quality/storm water management/erosion control

The project is required to provide for stormwater management in accordance with Maine DEP Chapter 500 and City of Portland Technical Manual Section 5 standards for stormwater management. The Applicant has submitted a stormwater management report and a grading and drainage plan to indicate erosion and sedimentation control measures and stormwater treatment for the proposed development.

A proposed stormwater drainage system will collect water on site through a new storm drain network that outlets into two (2) vegetated under drained soil filters, before being discharged into the existing municipal storm drain network within Westbrook Street. Runoff from the site will be captured within the vegetated soil filters and be released over a period of 24 to 48 hours. The applicant has submitted a full stormwater management plan demonstrating compliance with Section 5 of the Technical manual and Maine DEP chapter 500 standards

Staff finding: Met

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

A. Consistency with City Master Plans

There are no long-range plans that apply to this project.

Staff finding: Met

B. Public safety and fire prevention

A life safety plan and fire suppression plan was included as part of this application. Access to the site has been designed to allow emergency vehicle access to circulate through the parking lot. Hydrant locations, fire suppression features and site access have been designed based on feedback received from the Portland Fire Department (Attachment L)

Staff finding: Met.

C. Availability and capacity of public utilities

This application involves new underground electrical utilities meeting an existing pole on Westbrook St. The site will connect to the existing Westbrook St. sewer via a new 8" main. The applicant has provided ability to serve letters from Central Maine Power and the Portland Water District. The proposed Hotel building will be serviced by a proposed 2" water service connection as well as a 6" fire suppression service from the existing 12" cast iron water main within Jetport Boulevard

There is an existing private storm drainage easement running along the site's easterly property line. The applicant is aware of this easement and no significant disturbance to this area is anticipated during construction.

Staff finding: Met

4. Site Design Standards (Section 14.6.4)

A. Massing, ventilation, and wind impact

The proposed building is 37.7 ft. in height which is below the maximum allowable height of 45 ft. Given the building's size and location there are no anticipated impacts with respect to building massing, ventilation, or wind, associated with this application.

Staff finding: Met.

B. Shadows

No adverse shadow impacts are anticipated with this application, and the building as designed is not subject to the City's shadow standards, based upon the height of the building, which is less than 45 feet.

Staff finding: Met

C. Snow and ice loading

The proposed building is not in a location where falling snow or ice could fall onto abutting properties or rights-of-way. The applicant has detailed snow storage locations on included plans.

Staff finding: Met

D. View corridors

This standard is not applicable to this application.

E. Historic resources

This application does not lie within a historic district and is not subject to any Historic Preservation reviews.

F. Exterior lighting

The proposed development includes full cutoff / dark sky compliant light fixtures to minimize light spillover. The majority of site lighting will be within the parking lot and along internal walkways. The

building entrance will be highlighted with illuminated signage on the building. A full photometric plan was included. Proposed lighting fixtures outlined in the photometric plan meet the standards outlined in Section 12 of the Technical Manual.
Due to the site's location, no significant light impact is anticipated for adjacent properties.
A full photometric plan is included as attachment N an P17.

Staff finding: Met

G. Noise and vibration
HVAC, air handling units, and other necessary equipment will be installed on the building rooftop. Modular water boilers will be located in the mechanical penthouse. Given the location of the building, the placement of HVAC, generators and other equipment is not anticipated to interfere with abutting residential properties.

Staff finding: Met

H. Signage and wayfinding
Proposed signage includes brand-specific entry signs in proximity to the main driveway. Additional brand signage will be installed on the building above the main entrance and lobby.

Staff finding: Met

I. Zoning-related design standards
There are no design standards applicable to the Airport Business zone.

Staff finding: Not applicable.

VIII. NEIGHBORHOOD MEETING & PUBLIC COMMENT

The applicant held a neighborhood meeting on April 4, 2024 at 5:30 Pm. The in-person meeting was held at the Hilton Garden Inn located at 145 Jetport Blvd. Seven (7) members of the public were in attendance. Public comment centered on traffic impacts, vegetated buffers and site lighting.

A full sign-in sheet and meeting minutes are included as attachment U.

No written public comment has been received.

NEXT STEPS

Staff will continue to review resubmitted plans and documents to ensure the proposed project complies with all applicable standards, and specifically:
1. Address any outstanding Staff comments
2. Address additional comments from the Planning Board.
3. Prepare final plan submission.
4. Schedule and hold planning board public hearing

IX. ATTACHMENTS

Staff Materials

1. Staff Review Comments and Worksheet
2. Transportation Program Manger's TDM comments
3. Zoning Worksheet

Applicants Submittal

A. Cover Letter
B. Major Site Plan Checklist
C. Zoning Analysis
D. Right, Title & Interest
E. Easements
F. Waivers
G. Financial Capacity
H. Technical Capacity
I. Conformity with Land Use Ordinance
J. Stormwater Management Report
K. Erosion and Sedimentation Control
L. Fire Department Letter
M. Wastewater Capacity
N. Lighting
O. Architectural Design
P. Utilities
Q. Construction Management Plan
R. Solid Waste Disposal
S. Parking Analysis
T. Traffic Impact Study
U. Neighborhood Meeting
V. Comment Response Letter
W. Inclusionary Zoning

Plans

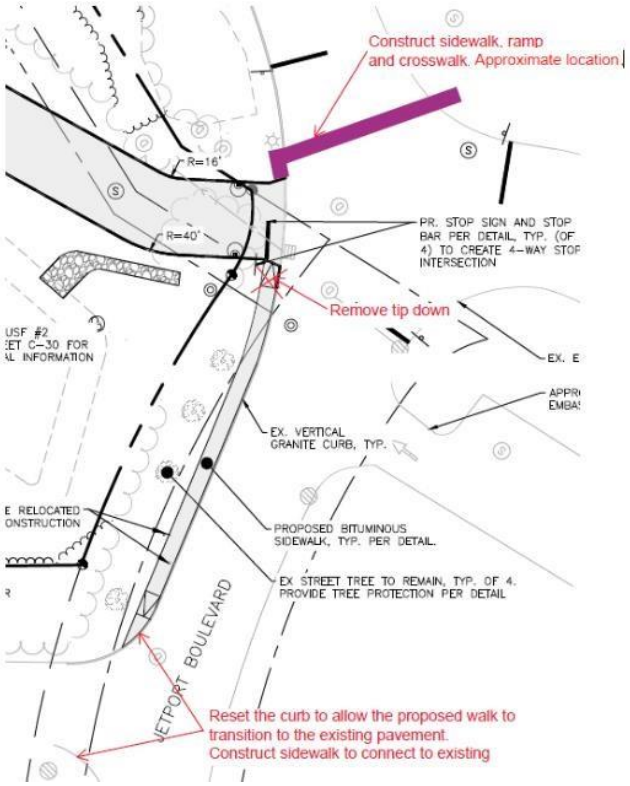
P1. Cover Sheet & Legend
P2. General Notes
P3. Survey
P4. Construction Management Plan
P5. Site Plan
P6. Utility Plan

P7. Grading and Drainage Plan
P8. Site Details 1
P9. Site Details 2
P10. Site Details 3
P11. Utility Details 1
P12. Utility Details 2
P13. Drainage Details 1
P14. Drainage Details 2
P15. Erosion & Sedimentation Control
P16. Erosion & Sedimentation Control Notes
P17. Photometric Plan
P18. Sight Distance Exhibit
P19. First Floor Plan
P20. Upper floor Plan
P21. Elevations

Site Plan Review Standards (Sec. 14.6)

Transportation Standards (Sec. 14.6.1)

Standard	*Discussion*	*Finding*
Impact on Surrounding Street Systems	Overview: The hotel driveway is proposed to connect with the intersection of Westbrook Street and Jetport Blvd. and proposes to alter the intersection into a four-way stop. This application proposes to install a new section of sidewalk along Jetport Blvd. This project is not anticipated to generate more than 100 vehicle trips during peak hours and therefore a Traffic Movement Permit is not required. The applicant has provided a Traffic Impact Study. Updates Requested • A traffic operation analysis was performed at the Jetport Boulevard/Westbrook Street/Site Driveway and Jetport Boulevard/International Parkway intersections. The model analysis indicates both intersections will operate at acceptable levels of service during the AM and PM peak hour. It should be confirmed if the analysis reflected the All-way Stop condition at the Jetport Boulevard/Westbrook Street/Site Driveway intersection. The applicant shall provide the Synchro model files for review. • The applicant conducted an All-Way Stop analysis at the Jetport Boulevard/International Parkway intersection. Based upon their analysis, a multiway stop condition is not warranted. The applicant should note if the analysis was based on the new or old MUTCD and update the analysis if the old version was used. The applicant does recommend some vegetation removal, which would improve sight distance, and this should be a requirement of their approval. • The applicant provided a sight distance graphic which is acceptable. Staff and peer reviewers will work with DPW in identifying specific design details for the site driveway intersection and implementation of the all-way stop condition. • The applicant shall provide an accessible path from the sidewalk in the ROW to the proposed building. • The applicant shall dimension existing conditions in the ROW in addition to proposed improvements on the plan view sheets. For example ROW, street, lanes sidewalk, esplanade driveways	Not Met

	(and other improvements) widths as well as when a width changes. The applicant will need to label and or provide spot grades and slopes for the proposed sidewalk, curb ramps and driveway • improvements at grade breaks. The stop bar shall be painted outside of the limits of the • driveway and sidewalk. The applicant shall construct compliant pedestrian ramps (with • landings and sidewalk connections where needed) and a crosswalk leading to and from the property (across Westbrook Street) per the City's Technical Manual section one. The applicant shall construct compliant pedestrian ramps and a crosswalk at the intersection of Westbrook Street and Jetport Boulevard (see attached image of approximate location 	
Access and Circulation	<u>Overview:</u> Access to the site is provided via a 24' driveway connecting to the intersection of Westbrook St. and Jetport Blvd. Internal circulation within the parking area is provided by 24' drive aisles. Internal sidewalks are proposed to connect parking areas with the main hotel entrance points and to the rear outdoor seating area.	Not Met

	Updates Requested • A pedestrian facility from the building to Jetport Boulevard and to the existing sidewalk system on Westbrook Street shall be provided. • The applicant shall attempt to provide internal pedestrian circulation (walkways for the users) throughout the parking lots and connect to the building walkways. • The entrance to the property shall be constructed as a driveway not a roadway. The sidewalk and driveway shall be reconstructed in accordance with the City's Sidewalk and Driveway Apron Material Policy and current City standards. The applicant shall update the plans and provide spot grades and slopes for the proposed sidewalk. The sidewalk material shall be continued through the driveway aprons at grade with the proposed sidewalk and not in excess of 2% cross-slope per the current City standards. • The driveway shall be constructed per the City Technical Manual Standard for COMMERCIAL/INDUSTRIAL DRIVEWAY APRON I-9B. Construct the sidewalk adjacent to the driveway apron to the property line and transition the sidewalk to connect to the proposed sidewalk behind the curb.	
Public Transit Access	Overview: Not Applicable Updates Requested • This standard is not applicable to this application.	Met
Parking	Overview: This application proposes a total of 106 parking spaces. The proposed parking will be utilized by short-term hotel guests, hotel staff and long term "park and fly" patrons. The applicant intends to provide long-term parking for hotel guests traveling from the Jetport. Six (6) bicycle parking spaces are provided as well as 21 level-two EV charging stations. Updates Requested: • The number of parking spaces proposed is consistent with the ITE Parking Generation Manual and therefore reasonable. It should be noted that the 6th Edition of the ITE Parking Generation Manual estimates 78 spaces using the average rate and 103 spaces for the fitted curve method. The applicant should discuss the "park and fly" operations and how that may impact traffic levels and parking supply. • Some of the parking spaces are 21' long and exceed the city's standard. An explanation shall be provided.	Not Met

Transportation Demand Management	Overview: A TDM plan prepared by VHB has been included with this application. Planned TDM strategies include: - A free hotel shuttle to the Jetport terminal - Bicycle parking for staff - On-site showers and lockers for staff who bike to work - Improved pedestrian access to the site - Proximity to an existing stop on METRO Route 5 The applicant will be responsible for monitoring and reporting the effectiveness of implemented TDM strategies by May 15th of each year. Updates Requested • None at this time	Met
Environmental Quality Standards (Sec. 14.6.2)		
Standard	*Discussion*	*Finding*
Preservation of Significant Natural Features and Landscape Preservation	Overview: The current site is undeveloped and consists of a cleared area covered by grass and low shrubs and several on-site trees located primarily at the front and sides of the parcel. The applicant has not submitted a full tree inventory and are currently investigating the quantity of trees 10 inches DBH or greater located within the limits of construction. Given the location of the building and parking facilities it is anticipated that a minimum of 30% of the trees 10 inches or greater will be preserved. Updates Requested • See comments in "Site Landscaping and Buffers"	Not Met
Site Landscaping and Buffers	Overview: This application proposes 24 trees and approximately 55 shrubs to be located throughout the site. Four existing street trees will be preserved and two will be removed due to utility conflicts.	Not Met

	Updates Requested • The tree planting detail shows the tree planted at a depth where the trunk flare is below grade and the mulch is applied right up to the trunk, would you please provide a tree planting detail that shows the bottom of the trunk flare at or slightly above grade and the mulch tapered to the bottom of the trunk flare as detailed in ANSI A300 Ch 6: Planting and Transplanting (See attached copy) • Are the two street trees proposed for removal going to be replanted or is there underground infrastructure that would conflict? • Is it possible to include setback plantings along Westbrook street to plant some larger growth form species on the grassy knoll behind the power lines? o If that interferes with the drainage easement is it possible to include smaller growth form plantings along Westbrook St underneath the power lines	
Water Quality, Stormwater Management and Erosion Control	Overview: A proposed stormwater drainage system will collect water on site through a new storm drain network that outlets into two (2) vegetated under drained soil filters before being discharged into the existing municipal storm drain network within Westbrook Street. Runoff from the site will be captured within the vegetated soil filters and be released over a period of 24 to 48 hours. The applicant has submitted a full	Not Met

	stormwater management plan demonstrating compliance with Section 5 of the Technical manual and Maine DEP chapter 500 standards. Full comments from the City s peer review engineer are detailed below.	

Updates Requested

- The project is required to provide stormwater management in compliance with Maine DEP Chapter 500 and City of Portland Technical Manual Section 5 regulations. The applicant is proposing to utilize vegetated under drained soil filters for stormwater management on the site. We have the following comments:
    - **Basic Standards** – The applicant has provided for erosion and sedimentation control as required for the Basic Standards.
    - **General Standards** – The project has provided two underdrain soil filters to treat the required amount of impervious and developed areas. The systems have been designed per MaineDEP Best Management Practices standards.
    - **Flooding Standards** – The Applicant has modeled the site to evaluate the Flooding Standard. There is a very small increase in flow modeled at one point of interest, but I agree that is negligible, and the total site runoff will be reduced by the proposed stormwater management systems in conformance with the flooding standards
- Guardrail details were included, but I do not see locations shown on the plans. Based on proposed slopes guardrails may be necessary around the perimeter of the parking areas next to the proposed soil filters.
- The retaining wall at the western side of the site is noted as designed by others. It is anticipated that there will be drainage from behind that wall, and outlet or connection locations should be anticipated.
- I have a few recommendations based on my own experience:
    - I'd recommend that the applicant evaluate their sewer pipe slopes to see if it would be reasonable to adjust and balance – currently there is a section of pipe with a slope of 0.005 followed by a pipe that is 0.08. This is not a requirement, but just a suggestion based on my own experience dealing with issues during construction.
    - I'd also recommend moving the electrical/communications conduit to avoid the

	stormdrain crossing next to catch basin 2 if possible – based on typical electrical depths there may be a conflict at this location. I'd suggest double checking the foundation drain/roof drain connection sizes with the MEP on the project to ensure that 6" will be adequate – where there are a couple of connection locations, this may be ok, but the roof size is fairly large. I would also recommend using backflow preventers to prevent roof drain or site drainage backflow into the foundation drain during larger rain events	

Public Infrastructure and Community Safety Standards (Sec. 14.6.3)		
Standard	*Discussion*	*Finding*
Consistency with City Master Plans	Overview: There are no City plans applicable to this application. Updates Requested: • None	Met
Public Safety and Fire Prevention	Overview: Access to the site has been designed to provide adequate emergency vehicle access to the site Updates Requested • None.	Met
Public Utilities	Overview: The applicant is awaiting confirmation of ability to serve from Central Maine Power and the Portland Water District, but this application does not anticipate overburdening existing sewer or stormwater utilities on Westbrook Street or Jetport Blvd. The site will connect to the existing Westbrook St. sewer via an 8" main. Underground electrical utilities will connect at Westbrook St. Onsite solid waste detention is provided.	Not Met

	Updates Requested • The applicant appears to be aware of an existing private storm drainage line and easement running in a northerly direction adjacent to the site's easterly property line along Westbrook Street. As far as DPW can tell, this storm drain line was built in association with a development at 1050 Westbrook Street around 1989. It appears this private storm drain line discharges into the existing detention basin at the northern end of the site. The existing detention basin is depicted on the applicant's survey. DPW would suggest the applicant complete additional research to figure out where this private storm drainage routes through the property and submit the original private easement document to the Planning department as part of the overall right, title and interest review for the project. It appears that	

	the applicant is avoiding major impacts to this drainage line, but since the location of the pipe and its discharge into the detention pond is not known, that can't be formally concluded at this time.	

Site Design Standards (Sec. 14.6.4)		
Standard	*Discussion*	*Finding*
Massing, Ventilation and Wind Impact	Overview: The proposed building is three stories in height and given its location is not anticipated to impact nearby buildings or streetscapes. Updates Requested • Please include full height and dimensions in future elevations.	Not Met
Shadow	Overview: Not applicable Updates Requested • None – Not Applicable to this Application	Met
Snow and Ice Loading	Overview: The location of the building is not anticipated to create snow or ice impacts on public rights of way. On site snow storage locations do not nterfere with pedestrian rights o way Updates Requested • None	Met
View Corridors	Overview: Not Applicable Updates Requested • None – Not Applicable to this Application as it is not within an established view corridor.	Met
Historic Resources	Overview: None Updates Requested • None – licable to this Application	Met
Exterior Lighting	Overview: The proposed development includes full cutoff / dark sky compliant light fixtures to minimize light spillover. A full photometric plan was included. Updates Requested • None	Met
Noise and Vibration	Overview: No significant noise or vibration impacts are anticipated with this application.	Met

	Updates Requested • None	

Signage and Wayfinding	Overview: Proposed signage includes building-mounted branding and branded signage at the entrance to the property. Updates Requested • None	Met
Design Standards	Overview: Not applicable Updates Requested • None	Met

Att. 2

Eric Freeman <efreeman@portlandmaine.gov>

PL-002815-2024 Hotel Major Site Plan 1060 Westbrook Street: TDM Plan Preliminary Review

1 message

Bruce Hyman <bhyman@portlandmaine.gov> Thu, Apr 18, 2024 at 12:20 PM
To: Eric Freeman <efreeman@portlandmaine.gov>
Cc: Matt Grooms <mgrooms@portlandmaine.gov>, Tom Errico <thomas.errico@tylin.com>

Good afternoon, Eric,

I've had a chance to review the Transportation Demand Management Plan (dated March 22, 2024) and have identified preliminary comments that I will share with the applicant and their consultants.

These preliminary comments include:

- The TDM plan does provide information in all of the areas required per the Technical Manual including existing conditions related to Mobility Context, presenting Baseline Site Data, establishing a TDM Mode Split Target, identifying TDM Strategies and addressing annual Monitoring and Reporting
- Requesting additional information and/or detail on the following items:
  - potentially establishing finer grained TDM targets, distinguishing between hotel employees and hotel guests
  - estimated on-site parking 'market rate' charges for hotel guests - a sampling of hotels in the immediate vicinity show some hotels provide free parking while others charge a nominal fee per day
  - the potential for employer support for transit fares for hotel employees
  - providing transportation alternatives options-alternatives information on the hotel's website for pre-trip planning purposes by hotel guests.

Please don't hesitate to contact me if you have any questions.

Bruce

--
Bruce Hyman
Transportation Program Manager
City of Portland
Department of Planning and Urban Development
389 Congress Street, 4th Floor
Portland, Maine 04101
(207) 874-8717 phone
bhyman@portlandmaine.gov

Zoning Worksheet | 03/26/2024| **PL-002815-2024|** *1060 Westbrook St.*
Submission #: [Date Submitted]
Planner: Eric Freeman – efreeman@portlandmaine.gov – 207-874-8724

Zoning Use Review (Article 6)

Use Permissions (Table 6-A – Table 6-F)

Proposed Use	Permitted, Conditional or Accessory Use	Zone	Use Std
Hotel	Permitted	Airport Business	

Zoning Performance Standards (Sec. 6.8)

Standard	Discussion	Finding
N/A	Updates Requested N/A	

Zoning Dimensional Review (Article 7)

Dimensional Standards (Table 7-A – Table 7-H)

Standard	Requirement 1	Requirement 2	Proposed	Finding
Lot Size (SF)	**20,000 SF**		**175,560 SF**	**Met**
Area per D.U.	**N/A**		**N/A**	**Met**
Street Frontage	**50 ft.**		**813 ft.**	**Met**
Front Setback (Min)	**5 ft.**		**5 ft.**	**Met**
Building Height	**45 ft.**		**37.5 ft.**	**Met**
Lot Coverage	**60%**		**49.5%**	
Maximum Impervious Area	**70%**		**39%**	**Met**
Off Street Parking Spaces	**30**		**106**	**Met**

ACORN ENGINEERING, INC.

Planning & Urban Development Department
Attn: Matthew Grooms, Development Review Manager
City of Portland, Maine
389 Congress Street, 4th Floor
Portland, ME 04101

February 23, 2024

Subject: Major Site Plan Application
1060 Westbrook Street, Portland, ME

Mr. Grooms:

On behalf of Giri Hotel Management, we are pleased to submit a Major Site Plan Application for the approximate 4.03-acre parcel located at 1060 Westbrook Street (Chart 207 & 210A, Book A & B, Lot 12 & 7 respectively. The project proposes to develop the parcel into a 120-Room 3-story Hyatt Studios, with a 106-space parking lot, and other site and utility improvements.

The property is currently vacant and undeveloped and contains a drainage and detention easement on the northeast side of the lot that to anticipated to be minimally disturbed as part of the project. Abutting the parcel to the east is the Portland International Jetport across Westbrook Street. The parcel is currently located within the Airport Business AB zone.

Due to the proposed building construction over 10,000 SF, we understand the project is subject to a Major Site Plan Development Application and approval from the Planning Board. We look forward to your review of this project. If you have any questions regarding these application materials, please do not hesitate to reach out.

Sincerely,



Peter Heil, P.E.
Project Manager
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

Portland, Maine Yes. Life's good here.

Planning & Urban Development Department

ZONING ANALYSIS Relevant Zone(s) AB - Airport Business

All Projects:

	Required	Proposed
Lot Size	20,000 SF	175,560 SF
Area Per Dwelling Unit	NONE	N/A
Minimum Street Frontage	50'	813'
Front Yard Minimum	20'	132.30'
Front Yard Maximum	NONE	N/A
Rear Yard	NONE	N/A
Yard Right	NONE	N/A
Yard Left	NONE	N/A
Side Street Setback	N/A	N/A
Step Back	N/A	N/A
Maximum Lot Coverage	NONE	N/A
Minimum Lot Coverage	NONE	N/A
Maximum Height	45'	37.72'
Open Space	NONE	N/A
Maximum Impervious Area	70%	38.77%
Pavement Setback	NONE	N/A
Floor Area Ratio	NONE	N/A
Off Street Parking Spaces	30	106
Loading Bays	N/A	N/A
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):			

QUITCLAIM DEED WITH COVENANT
Maine Statutory Short Form

KNOW ALL BY THESE PRESENTS THAT **TOYE REALTY HOLDINGS, LLC**, a Maine limited liability company with a place of business in Fort Lauderdale Florida, for consideration paid, grants to **GIRI PORTLAND WESTBROOK INC**, a Maine corporation with a place of business in Quincy, Massachustts, with a mailing address of 225 West Squantum Street, #200, Quincy, Masssachusetts 02171, with **QUITCLAIM COVENANT**, the land, together with any improvements thereon, situated in the City of Portland, County of Cumberland, and State of Maine more particularly described in **Exhibit A** attached hereto and made a part hereof.

IN WITNESS WHEREOF, the said TOYE REALTY HOLDINGS, LLC has caused this instrument to be signed and sealed this 14th day of July, 2020.

WITNESS:

TOYE REALTY HOLDINGS, LLC

By _____
Thomas A. Toye, III
Sole Member

STATE OF MAINE
COUNTY OF CUMBERLAND

July 14, 2020

Then personally appeared the above named Thomas A. Toye, III, in his said capacity, and acknowledged the foregoing instrument to be his free act and deed, and the free act and deed of said limited liability company, before me.

_____
Notary Public/~~Attorney at Law~~

_____
Printed Name

GAIL A. SANBORN
A Notary Public of Maine
My Commission Expires December 17, 2022

EXHIBIT A
1060-1122 Westbrook Street, Portland, Maine
(Tax Map 207-A-12 & 210A-B-7)

A certain parcel of land on the west side of Westbrook Street in the City of Portland, County of Cumberland and State of Maine, being more particularly described as follows:

Beginning on the west side of Westbrook Street at the southeast corner of land now or formerly of Norman H. Greenberg et al;

Thence along Westbrook Street S 07° 09' 35" E 269.70 feet;

Thence along Westbrook Street S 05° 38' 55" W 140.74 feet;

Thence along Westbrook Street S 18° 50' 25" W 241.83 feet;

Thence along Westbrook Street S 07° 01' 05" E 56.07 feet to the north side of a 50 foot access easement;

Thence along Westbrook Street S 07° 01' 05" E across the end of the access easement 60.22 feet to the parcel of land conveyed to Joseph F. Boulos et al by deed dated October 21, 1988 and recorded in Book 8557, Page 130, which parcel is now or formerly owned by Portland Jetport Associates;

Thence along the Portland Jetport Associates parcel on a curve to the left having a radius of 40.00 feet, an arc distance of 30.91 feet;

Thence along the Portland Jetport Associates parcel on a curve to the left having a radius of 315.00 feet, an arc distance of 190.81 feet;

Thence S 51° 55' 25" W along the Portland Jetport Associates parcel 269.00 feet;

Thence S 38° 04' 35" E along the Portland Jetport Associates 299.00 feet to land now or formerly of Thomas A. Toye, III;

Thence S 50° 10' 25" W along the Toye parcel 287.30 feet to a monument at land taken by the City of Portland;

Thence N 38° 04' 35" W along land of the City of Portland 357.77 feet to a monument;

Thence N 30° 06' 35" W along land of the City of Portland 335.07 feet to a monument at land now or formerly of Edward S. Boulos, Jr.;

Thence N 47° 04' 00" E along the land of Boulos and the land of Greenberg 1208.23 feet to Westbrook Street and the point of beginning;

SUBJECT, HOWEVER to the following easements:

1. Drainage and detention basin easement conveyed to Joseph F. Boulos et al by deed dated October 2, 1988 and recorded in Book 8557, Page 130, and described as Exhibit B in that deed, and TOGETHER WITH the right to relocate and/or terminate this easement as described in Exhibit B.

2. Access and utility easement, in common, conveyed to Joseph F. Boulos et al by deed dated October 2, 1988 and recorded in Book 8557, Page 130, and described as Exhibit C in that deed.

Excepted from this conveyance are the following properties:

1. Deed from Thomas A. Toye, III to the City of Portland, dated October 16, 1997 and recorded in said Registry of Deeds in Book 13434, Page 266.
2. Deed from Toye Realty Holdings, LLC to Toye Realty Holdings III, LLC, dated January 8, 2001 and recorded in said Registry of Deeds in Book 15976, Page 325.
3. Deed from Toye Realty Holdings, LLC to Toye Realty Holdings II, LLC, dated January 8, 2001 and recorded in said Registry of Deeds in Book 15976, Page 327.

Meaning and intending to convey and hereby conveying the remaining portion of the premises conveyed by Thomas A. Toye, a/k/a Thomas A. Toye, III to Toye Realty Holdings, LLC, dated April 29, 1999 and recorded in said Registry of Deeds in Book 14717, Page 316.

TOYT105/1408126

E. Summary of Written Easements

Exiting Easements:

Refer to the Boundary/Topographic Survey dated February 1, 2020 prepared by Spurwink Surveying inc. for all existing easements, including the Drainage and Detention Easement on the northeastern portion of the parcel.

Proposed Easements:

There are no proposed easements 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.
None at this time			

G. Financial Capacity

A letter from the Applicant's lender confirming financial capacity is attached to this section.

February 2, 2024

City of Portland
Planning Division
2389 Congress Street – 4th Floor
Portland, ME 04101

RE: Project – 1060 Westbrook Street
Applicant – Giri Hotel Management LLC

To whom it may concern:

Giri Hotel Management LLC and various related real estate entities have been commercial customers of Kennebunk Savings Bank for more than ten years. During that time the bank has financed multiple large-scale hotel and commercial development projects located in Maine, New Hampshire and Massachusetts. It is the opinion of Kennebunk Savings Bank that Giri Hotel Management has the technical and financial capacity to successfully undertake the above referenced project. Please share this document as necessary with any City or State agencies that may require it as part of the project approval process.

Please do not hesitate to contact me directly at 603-334-1021 with any questions or concerns.

Sincerely,

Christopher Kehl
Executive Vice President

H. Technical Capacity

Acorn Engineering specializes in providing urban redevelopment, civil/site design, environmental services, municipal consulting and construction administration. Acorn Engineering, Inc. have successfully designed and permitted more than 20 Site Plan/Subdivision projects in Portland during the past several years, including: Munjoy Heights, East Bayside Lofts, The Hiawatha, The Nightingale (Mercy Redevelopment), Winter Landing (CHOM Affordable Senior Housing), and The Equinox (CHOM Affordable Family Housing).

See attached for **Mussachio Architects** Technical Capacity

MUSSACHIO ARCHITECTS

30 NORTH FOREST ROAD
WILLIAMSVILLE, NEW YORK 14221
T:(716) 631-9949 F: (716) 631-0521

MARC C. MUSSACHIO, R.A.
ANTHONY C. MUSSACHIO, R.A.
www.MussachioArchitects.com

MUSSACHIO ARCHITECTS, P.C.

FIRM BACKGROUND

INTRODUCTION

Mussachio Architects, P.C. firm has varied experience in all types and phases of architecture from planning and feasibility studies to documentation and even construction management. We have worked extensively on both new construction and renovations and remodeling. As a commercial firm we have worked with diversified clients from manufacturers to doctors, Multi- family and retailers. We have provided services to developers, private individuals as well as the state and federal governments. Our finished projects range from versatile speculative buildings to special use facilities. We feel our professional services and attention paid to the little details and our clients real needs and concerns set us far above our competition.

GENERAL

Mussachio Architects is a full service commercial architectural firm. Founded in 1959 by Anthony M. Mussachio as a design, interiors, and rendering firm, we began to offer professional Architectural Services in 1973. Since inception, we have enjoyed periodic growth and consistent stability. We currently have nearly 100 years cumulative experience among our staff of 7; three of which are licensed Architects and with licenses in 30 states we currently serve clients throughout the United States. With NCARB certification reciprocal licensure in most states is available as we expand our geographic reach

We have utilized an AutoCAD CADD (Computer Aided Design and Drafting) system since the 80's. CADD allows us, as well as our clients, to remain at the cutting edge of technology. Along with faster productivity and greater accuracy, the computer allows us to make current, as well as future, changes to our work with greater efficiency. We also offer addition value added services such as GoToMeeting we host live meetings online where everyone can view items live on their computers and even move the mouse to maximize the effectiveness of communication between team members thus ensure the best finished results on our projects.

Mussachio Architects prides itself on the personal attention afforded our clients in transforming ideas into polished, finished products that are constructed on schedule and within budget. We stress excellence in design, adherence to client requirements and pro-

cedures, and timely completion of projects. Drawing from the diversified experience of key personnel in the organization, we offer an extensive list of services.

ARCHITECTURAL SERVICES

The following list is representative of many of the professional services that Mussachio Architects offers.

1) Site and/or Building Analysis and Selection
2) Project Feasibility
3) Project Master Planning
4) Project Programming
5) Site Planning
6) Site Engineering
7) Landscape Design
8) Building Design with Expertise in both New Construction and Renovation
9) Code Compliance Studies for Americans with Disabilities Act
10) Facilities Management
11) Structural Design and Analysis
12) Mechanical, Plumbing and Electrical Design with Expertise in Energy Conservation
13) Interior Space Planning
14) Interior Design with Expertise in Color and Lighting Coordination
15) Contract Documentation and Specifications (Working Drawings)
16) Cost Estimating and Analysis
17) Contract Bidding and Negotiation
18) Contract Administration
19) Construction Management
20) Design/Build
21) CADD Drafting and Design
22) CADD Space Planning

PROJECT DESIGN APPROACH

Paramount to Mussachio Architects' philosophy is to develop designs which best address the owner's expectations while maintaining as much existing nature, for both aesthetic and cost considerations. In order for a design to be truly successful, it is also important to ensure that it is complimentary to its surrounding environment, especially structures. Wherever possible we strive to maintain and usually enhance the natural amenities of a site. This is usually accomplished by developing greenspaces around our projects.

A key to this approach is the initial phases of contact and communication with our clients. It is during this phase that metaphoric foundations are laid and building blocks established for the entire project.

Mussachio Architects approaches each and every project as a new challenge. We take into consideration the requirements of the client, whether they be standard or unique, and analyze them along with the characteristics which make the location of the proposed project distinctive. Then, through years of experience and unequaled design creativity we create designs which surpass the expectations of our clients by evoking in structures the goals, philosophies and most importantly the functions of their end users.

ORGANIZATIONAL APPROACH

Mussachio Architects stresses excellence in design, adherence to client requirements and procedures, and timely completion of projects. Utilizing systems and techniques developed over years of experience in the management of projects, along with the key members of the project team, these objectives will be achieved. A Principal-in-Charge and a Project Manager will be assigned, and will devote the time necessary to discharge their responsibilities. Their duties will be to direct and coordinate all aspects of the work, ensure the assignment of required personnel to the project from individual departments and to support the project team in meeting technical and schedule requirements. Most importantly, they will ensure adequate liaison with the client throughout the project. Mussachio Architects shall perform the majority of service in house and coordinate and be responsible for any items produced by our consultants for M.E.P. & Structural engineering.

LICENSURE

We currently maintain architectural licensure in 30 states throughout the United States. Principals in the firm maintain NCARB certification which allows reciprocal licensing with most contiguous states of the union.

AWARDS

Mussachio Architects has an acknowledged reputation for excellence in new design as well as renovations, such as the Northtown World Auto Center which received an **"Award of Beauty"** from the Amherst Chamber of Commerce and an **"Award for Historic Preservation"** for the Library Restaurant in Olean NY. We are also the recipients of the **Best New Building** award for the state-of-the-art Delta Sonic Car Wash, Irondequoit, New York. The firm was nominated by theUS Postal Service for our design for their West Amherst branch to receive the **National Presidential Design Award**. This award is only given once every four years for outstanding federal design projects. We were awarded the **"Best Historic Renovation"** in the Business First Journals **Brick by Brick Awards** for creating the first downtown supermarket in decades, the Washington Market at 461 Ellicott St., Buffalo, NY. Again our design for Patrick Development's Corporate Headquarters on Transit Rd., Amherst won **"Best new Office"** in Business First Journal's **Brick by Brick Awards**. Our facade renovation project of an existing retail building; 3720 South Park Ave.

Mussachio Architects - Firm Background (cont'd)

Facade Renovation in Hamburg, NY received a **"Town of Hamburg Beautification Award"**.

\Mktg\Masters\Background

I. Conformity with Land Use Ordinance

The following outline is made in accordance with the City of Portland Code of Ordinances, Chapter 14 Land Use. Specifically, Article 14 Section 6 Site Plan Review Standards.

OVERVIEW
The proposed project has been designed to conform to City standards where possible as demonstrated in the following narrative.

(a) Transportation Standards

1. Impact on Surrounding Street Systems:

   The project will not generate 100 or more cars during peak hour; therefore a Traffic Movement Permit will not be required. The site is located on Westbrook Street and can be accessed directly via Westbrook Street. The change of use is not anticipated to create any significant hazard to safety on the surrounding street network. Congestion of the intersections is not anticipated. As requested by the City, a Traffic Impact Study was performed and attached under Section T. Traffic Impact Study, which includes detailed analysis and additional information on the existing and proposed conditions.

2. Access and Circulation:

   a. Site Access and Circulation:

      This project conforms with the design standards of Section 14.6.1.B as demonstrated in the following narrative:

      (i) All site access and internal circulation will be designed in accordance with the standards set forth in Section 1 of the Technical Manual.

      (ii) A sidewalk exists across the street from the project on Westbrook Street and will provide pedestrian access to the site via an existing crosswalk located at the adjacent site to the west. The project proposes to install a new section of sidewalk along the Jetport Boulevard frontage.

      (iii) Egress and access to the site is directly off the sidewalk on Jetport Boulevard. There are no anticipated conflicts with traffic flows or turning movements.

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

   b. Loading and Servicing:

      (i) The site has a proposed loading area/pedestrian drop off located at the front entrance of the building.

c. Curb and Sidewalks:

(i) A sidewalk with curbing exists on Westbrook Street. The project proposes to install a new section of sidewalk along the Jetport Boulevard frontage as well as additional site improvements including a new internal sidewalk to allow safer pedestrian maneuverability.

(ii) Any disturbance of this sidewalk to accommodate the site will be rebuilt in conformance with Chapter 25 of the City's Code of Ordinances and the applicable design standards in the City's Technical Manual.

(iii) Not applicable.

(iv) Not applicable.

3. Public Transit Access:

a. The project is located near a bus route with the closest bus stop located on Jetport Boulevard directly adjacent to the parcel.

b. Not applicable.

c. Not applicable.

4. Parking:

a. Vehicular parking:

(i) Per table 19-A: Off-street parking minimums for hotels, 1 parking space shall be provided per 4 guest rooms.

(ii) A Traffic Impact Study has been prepared by VHB. See Section T for additional information.

(iii) A parking study for the proposed development has been provided due to the project exceeding the minimum parking requirements by 10% or more. See Section S for additional information.

(iv) Parking spaces and aisles are designed to conform to the standards set forth in the City of Portland Technical Manual.

b. Bicycle parking

(i) A minimum of 6 bicycle parking spaces have been provided on the site.

(ii) N/A

c. Snow Storage:

(i) See the Site Plan for snow storage locations. The client will be responsible for the management of snow removal from the site as necessary during larger storm events.

(ii) Snow storage shall not be located where it interferes with pedestrian walkways or stormwater management systems.

d. Electric Vehicle (EV) charging

(i) A minimum of 21 level two EV parking spaces will be provided per Section 1 of the Technical Manual.

5. Transportation Demand Management (TDM):

a. As the project is a commercial use consisting of greater than 50,000 sf of GFA, we understand a Transportation Demand Management plan for the project will be required. The development team and traffic engineer are coordinating TDM strategies and a TDM Plan will be forwarded to the City upon completion.

b. The Transportation Demand Management plan will comply with the standards set forth in the City of Portland Technical Manual.

(b) Environmental Quality Standards

1. Preservation of Significant Natural Features:

a. The layout of the site is designed to limit disturbance to the manmade stormwater ponds to the greatest extent possible.

b. Not applicable.

c. Not applicable.

2. Landscaping Preservation:

a. Existing vegetation and trees will be preserved to the maximum extent practicable.

b. Existing vegetation and trees will be preserved to the maximum extent practicable.

c. We are currently investigating the quantity of trees 10 inches DBH or greater located within the limits of construction. It is anticipated that a minimum of 30% of the trees 10 inches or greater will be preserved.

d. Not applicable.

e. Not applicable.

3. Site landscaping and buffers.

a. Landscaping
(i) 24 trees & 59 shrubs are provided on the site to meet the landscape requirements.

b. Buffers
(i) The proposed solid waste containers will be located within the internal parking lot and will be screened from view of public sidewalks and adjacent streets.

(ii) Not applicable.

(iii) Not applicable

c. Parking and vehicle display lot landscaping.

(i) 24 trees & 59 shrubs are provided on the site to meet the parking lot landscape requirements.

(ii) The landscaped islands are distributed such that uninterrupted pavement does not exceed forty spaces.

(iii) Not applicable.

4. Street trees

a. The project proposes to preserve four street trees on the project's frontage and will also need to remove two existing street trees due to utility conflicts. The remaining frontage that is proposed to remain undisturbed to the east of the lot is currently sloped and provides a buffer from the exisitng telephone wires along the project frontage. The tree line located approximately 30 feet from the property line will remain as part of this project.

b. Not applicable.

5. Water Quality, Stormwater Management and Erosion Control:

a. Stormwater

(i) A proposed stormwater drainage system will collect water on site through a new storm drain network that outlets into two (2) vegetated under drained soil filters before being discharged into the existing municipal storm drain network within Westbrook Street.

(ii) Any stormwater that flows onto adjacent lots will not exceed the pre-development flows.

(iii) The runoff from the site will be captured within two (2) vegetated under drained soil filters and released over a period of 24 – 48 hours. The stormwater network has been designed to decrease peak flow rates and not overburden the existing downstream capacity.

b. A site-specific Stormwater Management Plan has been developed for the project to show compliance with Section 5 of the Technical Manual, including standards of MEDEP Chapter 500. 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. There are no proposed easements as part of this project.

2. Public Safety and Fire Prevention:

   a. Public Safety Design

      (i) The site has long viewing aisles and minimal spaces obscured from view.

      (ii) Access to the site has been designed to provide adequate emergency vehicle access to the site.

      (iii) This project will provide new site lighting and will promote natural surveillance and access control.

   b. Emergency Access
      (i) Access to the site has been designed to comply with the Section 3 Public Safety standards of the Technical Manual.

3. Public Utilities:

   a. Ability to Serve letters have been sent to the respective companies. Responses are forthcoming. The project does not anticipate overburdening the sewer, storm, and water utility mains within Westbrook Street or Jetport Boulevard.

b. A proposed underground electrical service from the existing utility pole on Westbrook Street is anticipated to serve the proposed building.

c. The building will be served by a proposed 8" sewer service connected to the 8" PVC sewer main within Westbrook Street.

d. The building will be served by a proposed 8" sewer service from the 8" PVC sewer system within Westbrook Street.

e. Spaces allocated for solid waste storage can be seen on the Site Plan. A proposed solid waste container will serve the proposed building and be screened from view.

(d) Site Design Standards

1. Massing, Ventilation and Wind Impact:

   a. Please refer to Section O, Architectural Design Narrative.

   b. Please refer to Section O, Architectural Design Narrative.

   c. Please refer to Section O, Architectural Design Narrative.

2. Shadows:

   a. Please refer to Section O, Architectural Design Narrative.

3. Snow and Ice Loading:

   a. The proposed building will be designed to reduce/prevent significant amounts of accumulated snow and ice from loading or falling into adjacent properties or public ways.

4. View Corridors:

   a. Please refer to Section O, Architectural Design Narrative.

5. Historic Resources:

   a. The development is not located in a Historic District.

   b. The development is not located within 100 feet of any designated landmark or historic district.

   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. See Section N: Lighting for additional information.

(ii) Any lighting that may adversely impact the abutting properties will feature 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 street lighting is 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. Signage

(i) Signage shall be designed to complement the building and its immediate context while conforming to the standards set forth in the City of Portland Land Use Code.

(ii) Signage shall be designed to complement the building and its immediate context while conforming to the standards set forth in the City of Portland Land Use Code.

(iii) Signage shall be designed to complement the building and its immediate context while conforming to the standards set forth in the City of Portland Land Use Code.

(iv) Signage shall be designed to complement the building and its immediate context while conforming to the standards set forth in the City of Portland Land Use Code.

(v) Signage shall be designed to complement the building and its immediate context while conforming to the standards set forth in the City of Portland Land Use Code.

b. Wayfinding

(i) All street and wayfinding signage shall meet the requirements of the Manual on Uniform Traffic Devices (MUTCD) and Chapter 25 of the City Code.

9. Design Standards:

a. The project has been designed to meet the standards set forth in the A-B – Airport Business zoning district. The project proposes to develop the parcel into a 120-Room 3-story Hyatt Studios, with a 106-space parking lot, and other site and utility improvements. Please refer to the Site Plan and Architectural Drawings for additional information.

A C O R N
ENGINEERING, INC.

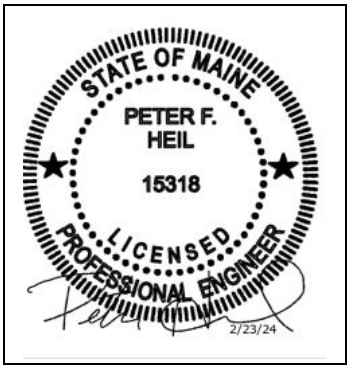
STORMWATER MANAGEMENT REPORT

Prepared For:

Giri Hotel Management
225 W Squantum Street, Suite 202
Quincy, MA 02171

Prepared By:

Acorn Engineering, Inc.
PO Box 3372
Portland, Maine 04104



March 2024

INTRODUCTION

Acorn Engineering, Inc. has been retained by Giri Hotel Management to provide civil engineering services for the proposed work located at 1060 Westbrook Street, Portland, ME 04102. The site is currently comprised of open space and drainage/detention ponds. The site will be developed into a 120-room 3-story Hyatt Studios, with a 106-space parking lot, and other site and utility improvements.

A stormwater analysis was prepared to demonstrate that the project will meet the following requirements of 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
- Maine DEP Chapter 500 Stormwater Management.

EXISTING CONDITIONS

The proposed project site is located at 1060 Westbrook Street. A Boundary/Topographic Survey dated February 1, 2020, has been prepared by Spurwink Surveying inc.

The existing property consists mostly of wooded area with a portion of open space. A small bituminous access drive is also present on site. Stormwater is currently directed toward manmade ponds onsite and ultimately discharges into the municipal stormwater system within Westbrook Street.

Within the 4.03-acre site, a manmade wetland has been identified as a natural resource existing on site. Careful consideration of existing drainage areas in the project area must be taken. The project is not located within a watershed classified as an Urban Impaired Stream.

PROPOSED DEVELOPMENT

The development will be served by Portland Water District, Portland Department of Public Works (sewer/storm), Unitil (natural gas), CMP (electric), Charter (cable), and Consolidated Communications (telephone).

The proposed project will increase the site's impervious area by approximately 1.56 acres, which triggers the City's water quality requirement. Treatment and storage will be provided in the form of two Vegetation Underdrained Soil Filters (VUSF). These VUSF's will collect a majority of the sites stormwater and ultimately discharge to the municipal stormwater system within Westbrook Street. The project has been designed to meet Chapter 500 General Standards.

BASIC STANDARDS – EROSION & SEDIMENT CONTROL

The development shall provide erosion and sediment control, inspection and maintenance, and housekeeping standards as specified in Section K: Erosion and Sediment Control Report and that the grading and construction activity will not impede or otherwise alter drainageways so as to have an unreasonable adverse impact on an adjacent downslope parcel.

GENERAL STANDARDS - WATER QUALITY

The development shall provide water quality treatment in accordance with the DEP Chapter 500 General Standards for no less than 95% of the new impervious area and 80% of developed area. Water quality treatment will be provided through the use of two Vegetated Underdrain Soil Filters (VUSF). The systems were sized to meet or exceed the requirements set forth within the MDEP Volume III: BMPs Technical Design Manual Section 7.1 Filtration BMPs have been shown to be very effective at removing a wide range of pollutants from stormwater runoff.

The treatment of the impervious & developed areas for the project are as follows:

Table 1 – Impervious Area Treatment Table

Impervious Area (SF)	Developed Area	Impervious Area with Treatment (SF)	Developed Area with Treatment (SF)
67,960	108,663	64,570 (95.01%)	88,953 (81.86%)

Based upon the project design, the two underdrained soil filters will treat a total of 64,683 SF of impervious area and 23,920 SF of non-impervious developed area, which exceeds the minimum requirements for both impervious and developed area. The VUSF soil filter areas are then sized upon the following equation based upon land coverage draining into the BMP:

$$[(\text{Imp. SF} \times 0.05) + (\text{Veg. SF} \times 0.02)] = \text{Filter Area (SF)}$$

The water quality volume is then analyzed to ensure the first 18" of ponding is capturing the required runoff. The required treatment volume is characterized by the following equation:

$$\left(\frac{\text{Imp. SF} \times 1.0"}{12"/1'}\right) + \left(\frac{\text{Veg. SF} \times 0.4"}{12"/1'}\right) = \text{Treatment Volume (CF)}$$

VUSF 1 (Land coverage draining into the BMP)

- Impervious Area = 39,189 SF
- Vegetated Area = 10,913 SF

VUSF 2 (Land coverage draining into the BMP)

- Impervious Area = 25,381 SF
- Vegetated Area = 13,470 SF

Table 2 – VUSF #1 Sizing Table			
Water Quality Volume Required (CF)	Filter Area Required (SF)	Provided Water Quality Volume (CF)	Provided Filter Area (SF)
3,629	2,177	5,929	2,178

Table 3 – VUSF #2 Sizing Table			
Water Quality Volume Required (CF)	Filter Area Required (SF)	Provided Water Quality Volume (CF)	Provided Filter Area (SF)
2,564	1,538	4,076	1,546

Pretreatment

Sediment pretreatment is provided by a sediment forebay at the inlet of each VUSF. The forebay is sized to accommodate a minimum of 10 storms per year based upon 500 pounds of sand per storm and a density of 90 pounds per cubic foot, in accordance with chapter 7.2 of the design manual.

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 3.10", 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)

Due to the project site chiefly containing impervious area surrounded by wetlands a consistent time of concentration (T_c) of 6 minutes was applied to each respective subcatchment for both the pre and post-development conditions as applicable.

Pre-development Calculations

The pre-development model was broken into three separate subcatchments.

- Subcatchment 1 – This tributary includes about one third of the parcel and drains directly to the Westbrook Street municipal storm drain network. The

land cover includes grass and wooded area.

- Subcatchment 2 – This tributary includes about one third of the parcel and drains directly to a detention pond location on the eastern side of the lot. The pond ultimately drains to the Westbrook Street municipal storm drain network. The land cover includes grass and wooded area.
- Subcatchment 3 – This tributary includes about one third of the parcel and drains directly to a man-made pond location on the northwestern side of the site. The pond ultimately drains to the Westbrook Street municipal storm drain network. The land cover includes wooded area.

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 Flow Rates

Drainage Area	2 – Year Storm Event (cfs)	10 – Year Storm Event (cfs)	25 – Year Storm Event (cfs)
POI 1	1.4	2.8	4.0
POI 2	1.4	2.6	3.7
POI 3	1.0	2.0	2.9
Total Runoff	3.8	7.4	10.4

Post-development Calculations:

The post-development model was broken into six separate subcatchments.

- Subcatchment 1.1 – This tributary includes a portion of the proposed hotel building and the northeast area of the proposed parking lot. This area is treated by vegetation undrained soil filter #1 and ultimately discharges into the municipal storm drain network.
- Subcatchment 1.2 – This tributary includes a portion of the proposed hotel building and the southern area of the proposed parking lot. This area is treated by vegetation undrained soil filter #2 and ultimately discharges into the municipal storm drain network.
- Subcatchment 1.3 – This tributary includes the eastern side of the lot and the drive aisle to access the site. This areas stormwater drains into the municipal storm drain network in Westbrook Street.
- Subcatchment 2 – This tributary area includes the northeast side of the lot and drains directly to a detention pond located on the eastern side of the lot. The pond ultimately drains to the Westbrook Street municipal storm drain network. The land cover includes grass and wooded area.
- Subcatchment 3 – This tributary area includes the northwestern side of the lot

drains directly to a man-made pond location on the northwestern side of the site. The pond ultimately drains to the Westbrook Street municipal storm drain network. The land cover includes wooded area.

The following table represents a 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)**	
POI 1	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
	1.4	1.5	2.8	2.8	4.0	4.1
POI 2	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
	1.4	0.2	2.6	1.0	3.7	1.7
POI 3	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
	1.0	0.1	2.0	0.8	2.9	2.6
Total Runoff	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
	3.8	1.8	7.4	4.1	10.4	7.0

It should be noted that the post development is reducing the runoff to the respective internal manmade pond point of interests within the site (R2 & R3) and minorly increasing the post development flow rate to POI #1 in comparison to the pre-developed condition. However, total peak flow rates in the post development are significantly reduced in comparison to the total predevelopment flow rates for the 2,10,25-year storms as the combined point of analysis enters into the City's municipal stormwater system within Westbrook Street.

A Post-Development Watershed Map created for this project can be viewed in Attachment B, and a copy of the HydroCAD calculations is included within Attachment C of this report. Lastly, vertical orifices are modeled in HydroCAD at the outlet structures of each VUSF. Please refer to the Grading and Drainage Plan and Details for additional information.

SOILS

Onsite soil information includes the following:

- Soil Conservation Service Medium Intensity Soil Survey for Cumberland County

The area within and surrounding the project includes soils types listed in the table below.

Table 6 – Hydrologic Soil Group	
Soils Type	**HSG**
Lamoine silt loam, 3 to 8 percent slopes	C/D
Scantic silt loam, 0 to 3 percent slopes	D

The HSG for the soils, listed above, show soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well to excessively drained sands, with a high rate of water transmission. Implementation of the proposed Erosion &

Sedimentation Measures by the contractor will be of the utmost importance to provide proper stabilization of 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.

Attachments

Attachment A: Pre-development Watershed Map
Attachment B: Post development Watershed Map
Attachment C: HydroCAD Calculations

GENERAL NOTES:

REFER TO STORMWATER REPORT FOR MORE INFORMATION.

1	SUBCATCHMENT
	SUBCATCHMENT EXTENTS
POI 1	POINT OF INTEREST (POI)
POA	POINT OF ANALYSIS
1	POND
1	REACH



PERMITING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
ATS LETTER	PFH 1/26/2024
CSS	PFH 2/9/2024
MAJOR SITE PLAN	PFH 7/23/2024

DRAWING NAME: **PRE-DEVELOPMENT WATERSHED MAP**

PROJECT NAME: HYATT STUDIOS HOTEL DEVELOPMENT
1060 WESTBROOK STREET, PORTLAND, ME 04102

CLIENT: GIRI HOTEL MANAGEMENT
225 WEST SQUANTUM STREET, SUITE 200, QUINCY, MA 02171

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND WITHOUT ADDITIONAL PLANS OR, OTHERWISE, SHALL ONLY BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
70 FORE RIVER PARKWAY, SUITE 104
PORTLAND, MAINE 04104
PO BOX 3422 (207) 775-2655

FILE:	1133_CIVIL
JN:	1133
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

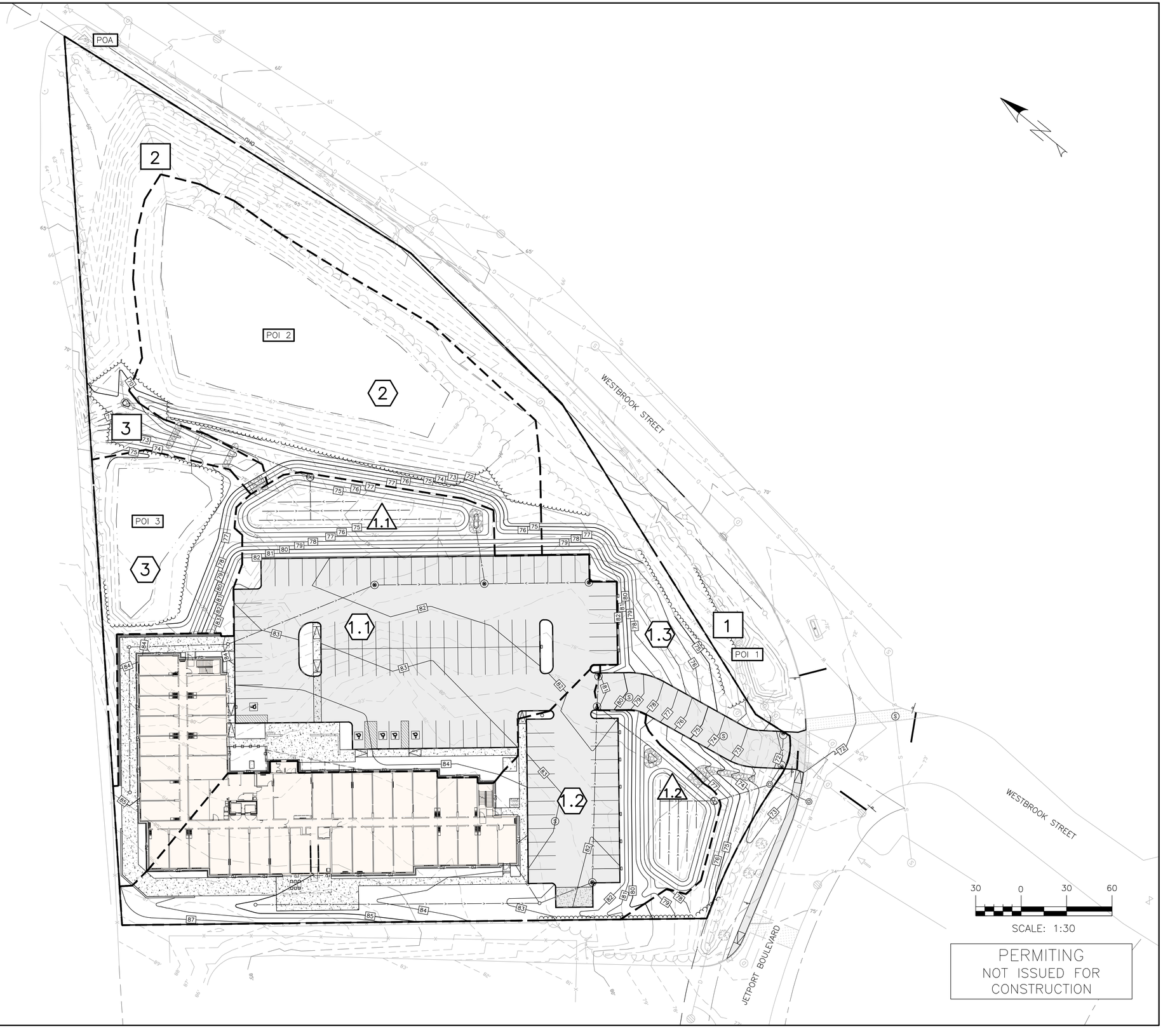
STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER

DRAWING NO.
PRE

GENERAL NOTES:

REFER TO STORMWATER REPORT FOR MORE INFORMATION.

1	SUBCATCHMENT
	SUBCATCHMENT EXTENTS
POI 1	POINT OF INTEREST (POI)
POA	POINT OF ANALYSIS
1	POND
1	REACH



PERMITING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
ATS LETTER	PFH 1/26/2024
CSS	PFH 2/9/2024
MAJOR SITE PLAN	PFH 7/23/2024

CONCEPT SITE PLAN

DRAWING NAME:

PROJECT NAME: HYATT STUDIOS HOTEL DEVELOPMENT
1060 WESTBROOK STREET, PORTLAND, ME 04102

CLIENT: GIRI HOTEL MANAGEMENT
225 WEST SQUANTUM STREET, SUITE 200, QUINCY, MA 02171

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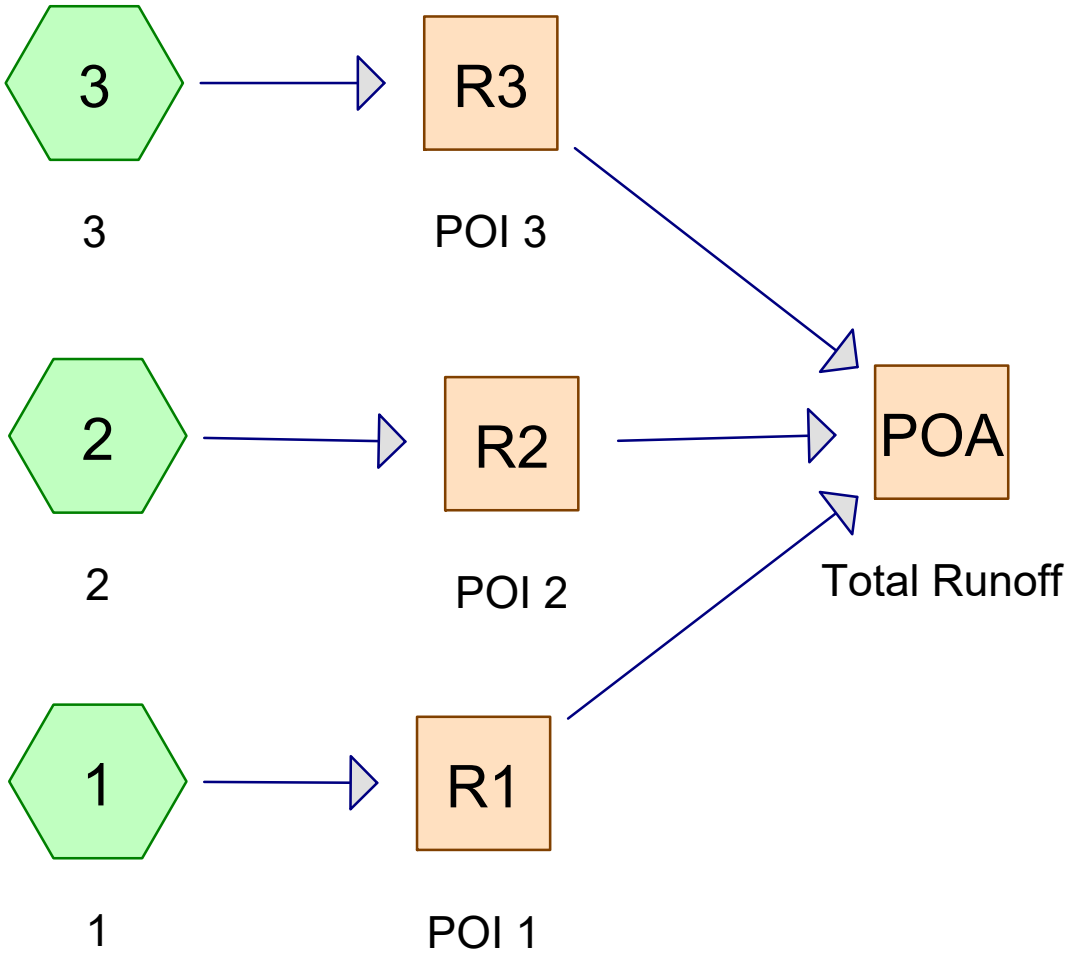
ENGINEERING
P.O. BOX 3332 PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1133_CIVIL
JN:	1133
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER
7/23/24

DRAWING NO.
C-10



Subcat Reach Pond Link

Routing Diagram for 1133_PRE-DEVELOPMENT
Prepared by HP Inc., Printed 2/23/2024
HydroCAD® 10.00-26 s/n 00620 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.225	80	>75% Grass cover, Good, HSG D (1, 2)
0.014	98	Paved parking, HSG D (1)
0.429	98	Water Surface, 0% imp, HSG D (2, 3)
2.362	77	Woods, Good, HSG D (1, 2, 3)
4.030	**80**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
4.030	HSG D	1, 2, 3
0.000	Other	
4.030		**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
0.000	0.000	0.000	1.225	0.000	1.225	>75% Grass cover, Good	1, 2
0.000	0.000	0.000	0.014	0.000	0.014	Paved parking	1
0.000	0.000	0.000	0.429	0.000	0.429	Water Surface, 0% imp	2, 3
0.000	0.000	0.000	2.362	0.000	2.362	Woods, Good	1, 2, 3
0.000	**0.000**	**0.000**	**4.030**	**0.000**	**4.030**	**TOTAL AREA**	

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: 1 Runoff Area=62,825 sf 0.98% Impervious Runoff Depth=1.26"
Flow Length=275' Tc=19.3 min CN=79 Runoff=1.43 cfs 0.152 af

Subcatchment 2: 2 Runoff Area=59,443 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=365' Tc=26.5 min CN=83 Runoff=1.45 cfs 0.174 af

Subcatchment 3: 3 Runoff Area=53,292 sf 0.00% Impervious Runoff Depth=1.20"
Flow Length=320' Tc=26.2 min CN=78 Runoff=1.01 cfs 0.122 af

Reach POA: Total Runoff Inflow=3.79 cfs 0.448 af
Outflow=3.79 cfs 0.448 af

Reach R1: POI 1 Inflow=1.43 cfs 0.152 af
Outflow=1.43 cfs 0.152 af

Reach R2: POI 2 Inflow=1.45 cfs 0.174 af
Outflow=1.45 cfs 0.174 af

Reach R3: POI 3 Inflow=1.01 cfs 0.122 af
Outflow=1.01 cfs 0.122 af

Total Runoff Area = 4.030 ac Runoff Volume = 0.448 af Average Runoff Depth = 1.33"
99.65% Pervious = 4.016 ac 0.35% Impervious = 0.014 ac

Summary for Subcatchment 1: 1

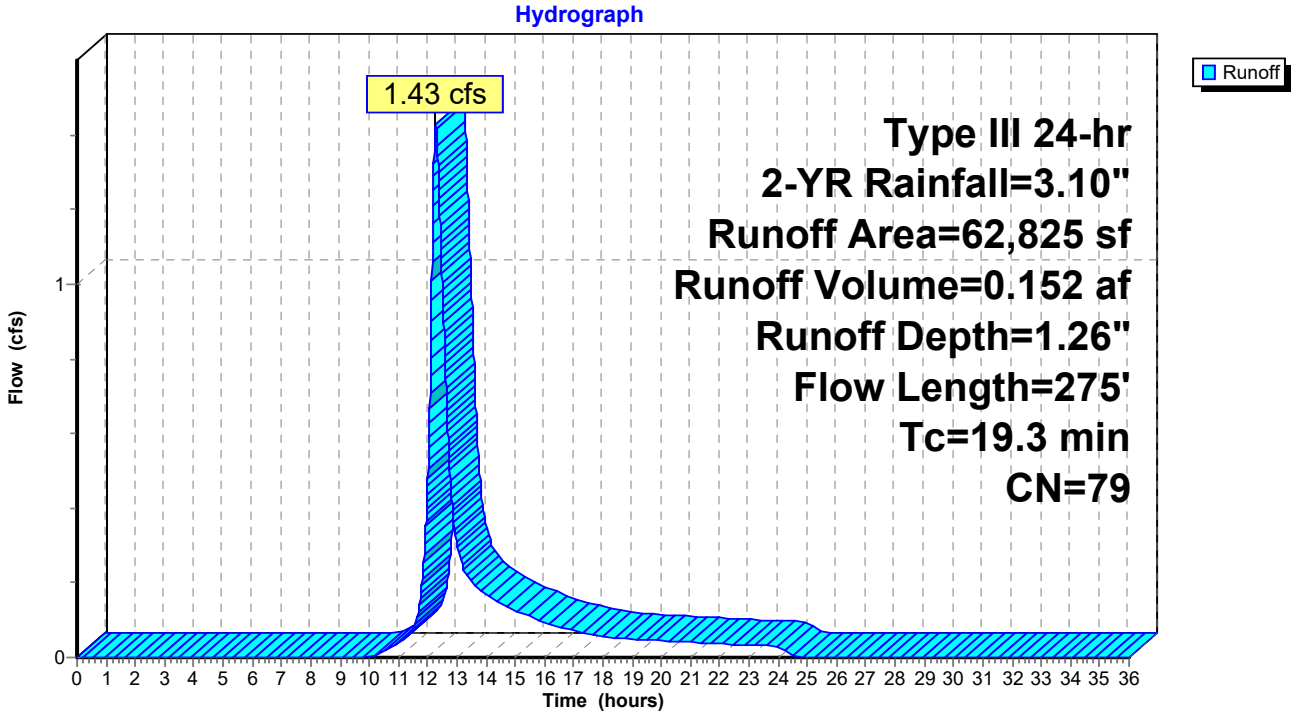
Runoff = 1.43 cfs @ 12.28 hrs, Volume= 0.152 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
39,751	80	>75% Grass cover, Good, HSG D
22,459	77	Woods, Good, HSG D
615	98	Paved parking, HSG D
62,825	79	Weighted Average
62,210		99.02% Pervious Area
615		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	150	0.0270	0.14		**Sheet Flow, SHEET A-B** Grass: Dense n= 0.240 P2= 3.10"
1.3	96	0.0300	1.21		**Shallow Concentrated Flow, SHALLOW B-C** Short Grass Pasture Kv= 7.0 fps
0.2	29	0.1550	1.97		**Shallow Concentrated Flow, SHALLOW C-D** Woodland Kv= 5.0 fps
19.3	275	Total			

Subcatchment 1: 1



Summary for Subcatchment 2: 2

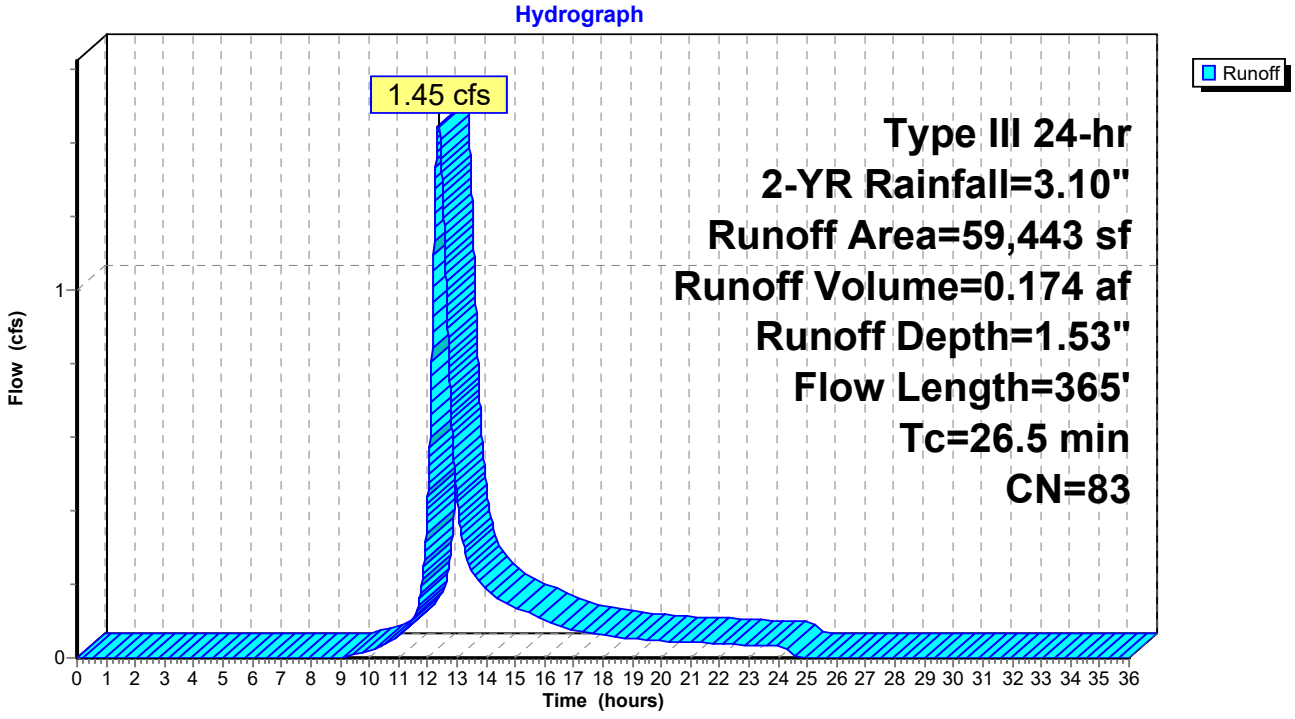
Runoff = 1.45 cfs @ 12.37 hrs, Volume= 0.174 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
13,607	80	>75% Grass cover, Good, HSG D
30,855	77	Woods, Good, HSG D
14,981	98	Water Surface, 0% imp, HSG D
59,443	83	Weighted Average
59,443		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	150	0.0366	0.11		**Sheet Flow, SHEET A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.8	215	0.0675	1.30		**Shallow Concentrated Flow, SHALLOW B-C** Woodland Kv= 5.0 fps
26.5	365	Total			

Subcatchment 2: 2



Summary for Subcatchment 3: 3

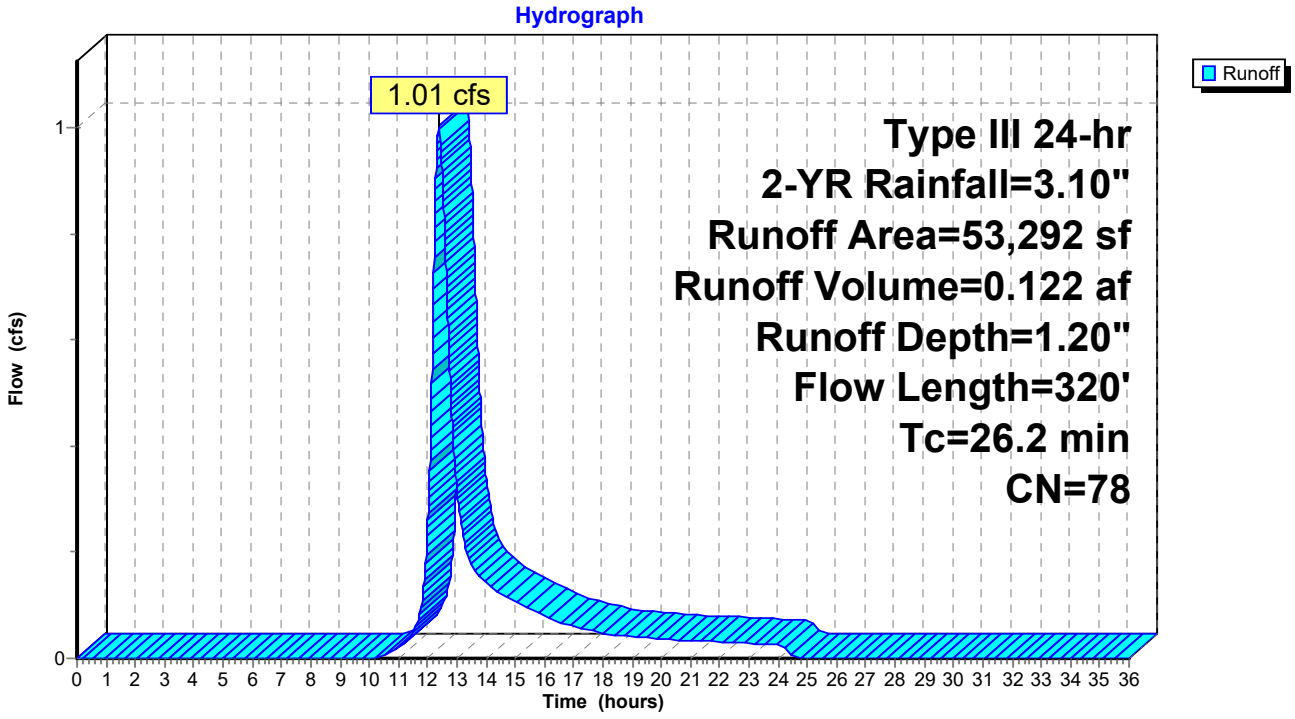
Runoff = 1.01 cfs @ 12.38 hrs, Volume= 0.122 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
49,580	77	Woods, Good, HSG D
3,712	98	Water Surface, 0% imp, HSG D
53,292	78	Weighted Average
53,292		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	150	0.0366	0.11		**Sheet Flow, SHEET A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.5	170	0.0520	1.14		**Shallow Concentrated Flow, SHALLOW B-C** Woodland Kv= 5.0 fps
26.2	320	Total			

Subcatchment 3: 3



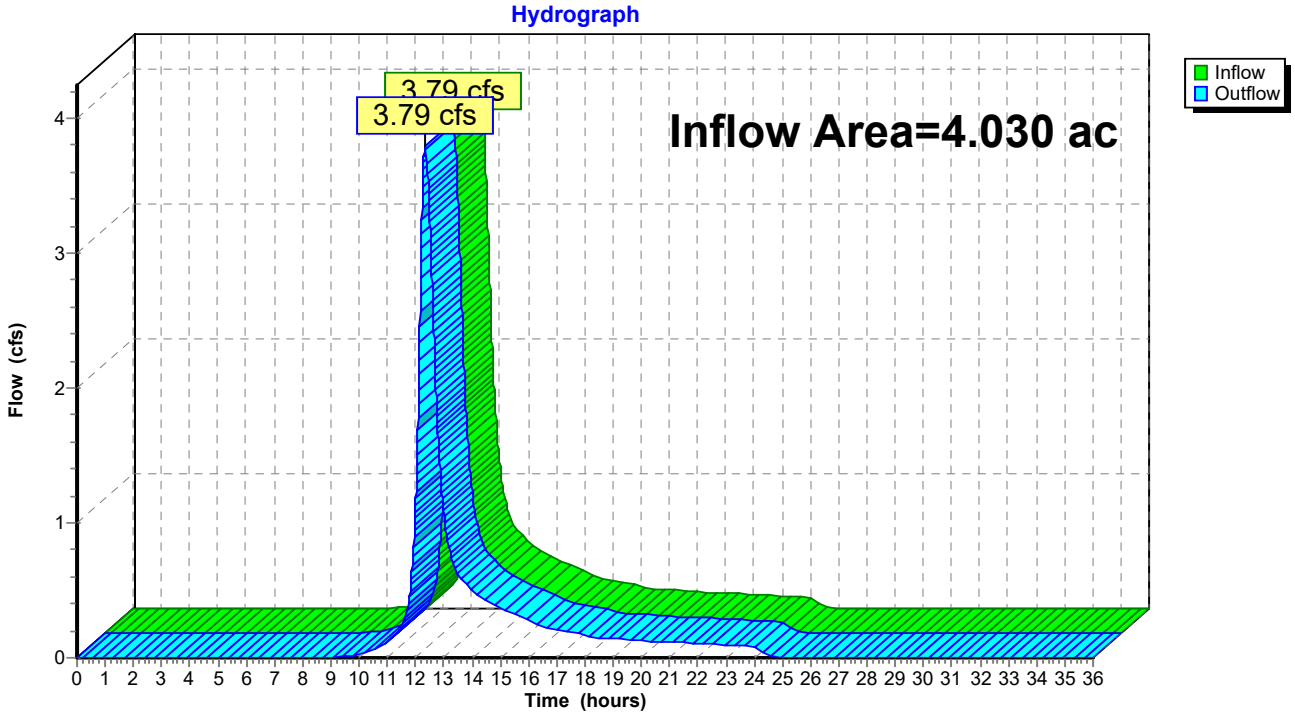
Summary for Reach POA: Total Runoff

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.030 ac, 0.35% Impervious, Inflow Depth = 1.33" for 2-YR event
Inflow = 3.79 cfs @ 12.34 hrs, Volume= 0.448 af
Outflow = 3.79 cfs @ 12.34 hrs, Volume= 0.448 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Reach POA: Total Runoff



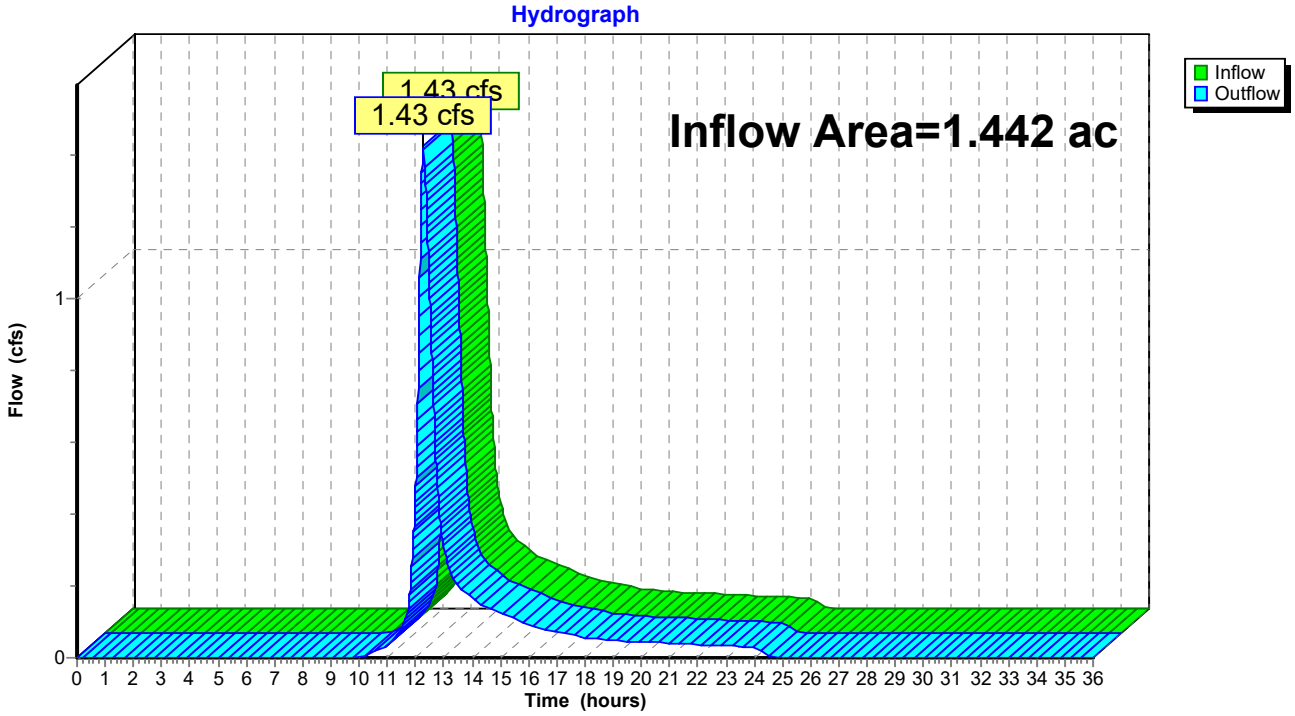
Summary for Reach R1: POI 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.442 ac, 0.98% Impervious, Inflow Depth = 1.26" for 2-YR event
Inflow = 1.43 cfs @ 12.28 hrs, Volume= 0.152 af
Outflow = 1.43 cfs @ 12.28 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Reach R1: POI 1



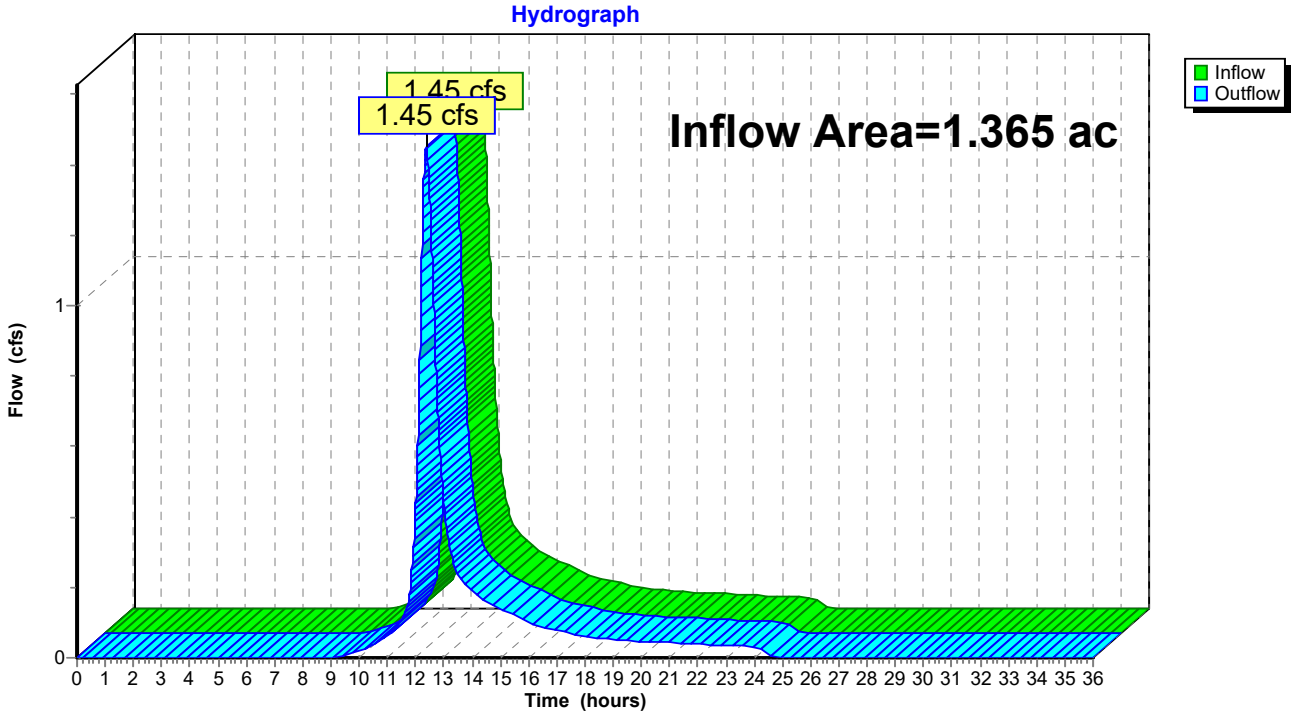
Summary for Reach R2: POI 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.365 ac, 0.00% Impervious, Inflow Depth = 1.53" for 2-YR event
Inflow = 1.45 cfs @ 12.37 hrs, Volume= 0.174 af
Outflow = 1.45 cfs @ 12.37 hrs, Volume= 0.174 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Reach R2: POI 2



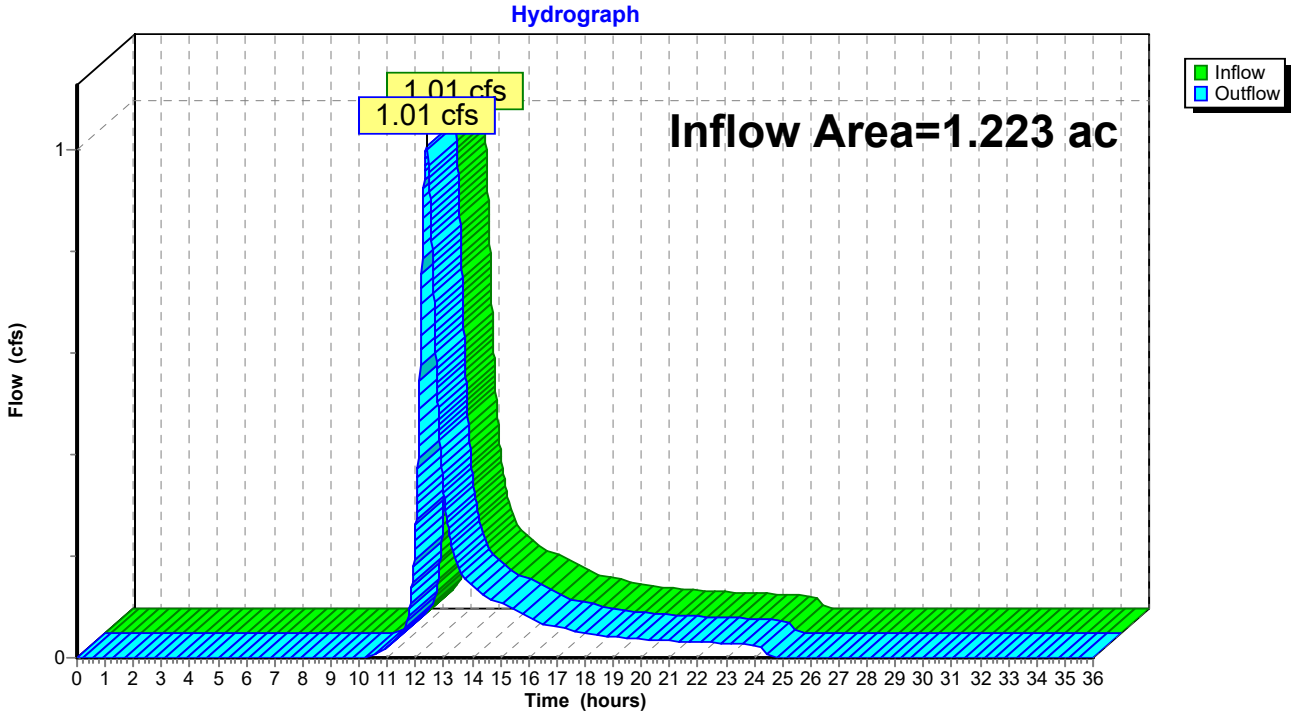
Summary for Reach R3: POI 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.223 ac, 0.00% Impervious, Inflow Depth = 1.20" for 2-YR event
Inflow = 1.01 cfs @ 12.38 hrs, Volume= 0.122 af
Outflow = 1.01 cfs @ 12.38 hrs, Volume= 0.122 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Reach R3: POI 3



Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: 1 Runoff Area=62,825 sf 0.98% Impervious Runoff Depth=2.46"
Flow Length=275' Tc=19.3 min CN=79 Runoff=2.84 cfs 0.296 af

Subcatchment 2: 2 Runoff Area=59,443 sf 0.00% Impervious Runoff Depth=2.81"
Flow Length=365' Tc=26.5 min CN=83 Runoff=2.69 cfs 0.320 af

Subcatchment 3: 3 Runoff Area=53,292 sf 0.00% Impervious Runoff Depth=2.38"
Flow Length=320' Tc=26.2 min CN=78 Runoff=2.05 cfs 0.242 af

Reach POA: Total Runoff Inflow=7.39 cfs 0.858 af
Outflow=7.39 cfs 0.858 af

Reach R1: POI 1 Inflow=2.84 cfs 0.296 af
Outflow=2.84 cfs 0.296 af

Reach R2: POI 2 Inflow=2.69 cfs 0.320 af
Outflow=2.69 cfs 0.320 af

Reach R3: POI 3 Inflow=2.05 cfs 0.242 af
Outflow=2.05 cfs 0.242 af

Total Runoff Area = 4.030 ac Runoff Volume = 0.858 af Average Runoff Depth = 2.55"
99.65% Pervious = 4.016 ac 0.35% Impervious = 0.014 ac

Summary for Subcatchment 1: 1

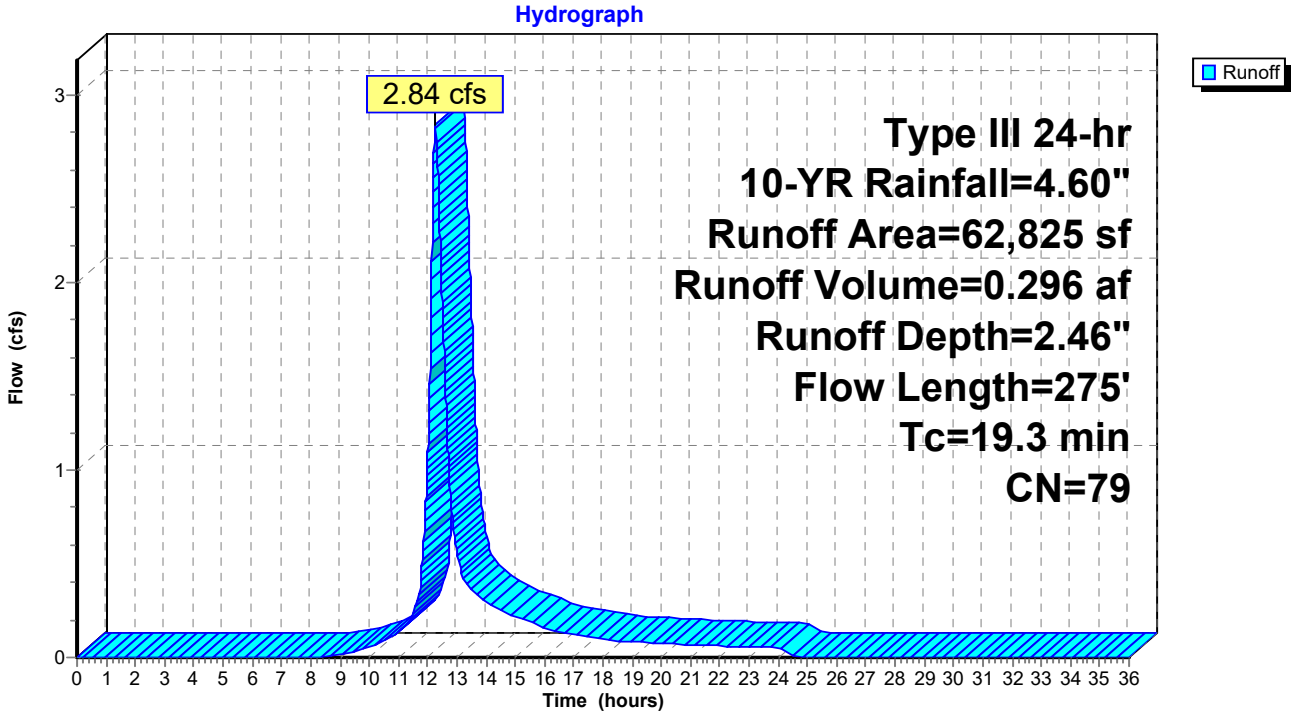
Runoff = 2.84 cfs @ 12.27 hrs, Volume= 0.296 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
39,751	80	>75% Grass cover, Good, HSG D
22,459	77	Woods, Good, HSG D
615	98	Paved parking, HSG D
62,825	79	Weighted Average
62,210		99.02% Pervious Area
615		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	150	0.0270	0.14		**Sheet Flow, SHEET A-B** Grass: Dense n= 0.240 P2= 3.10"
1.3	96	0.0300	1.21		**Shallow Concentrated Flow, SHALLOW B-C** Short Grass Pasture Kv= 7.0 fps
0.2	29	0.1550	1.97		**Shallow Concentrated Flow, SHALLOW C-D** Woodland Kv= 5.0 fps
19.3	275	Total			

Subcatchment 1: 1



Summary for Subcatchment 2: 2

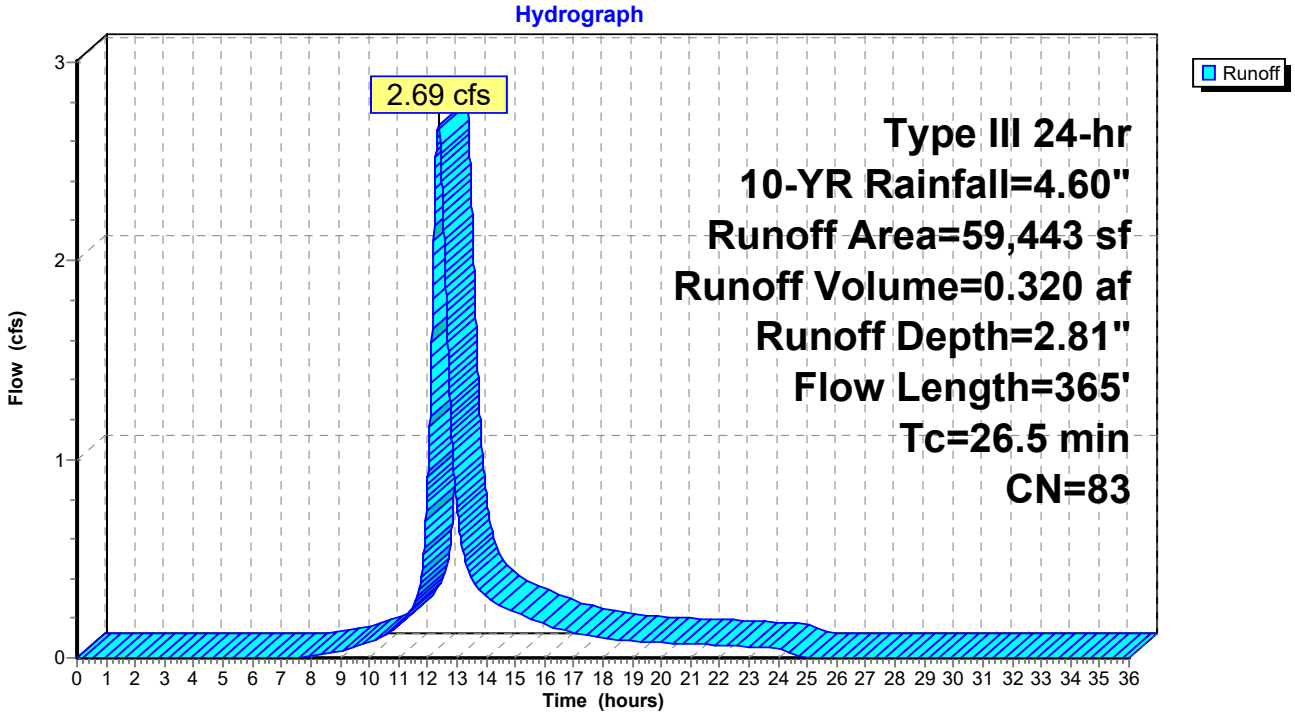
Runoff = 2.69 cfs @ 12.36 hrs, Volume= 0.320 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
13,607	80	>75% Grass cover, Good, HSG D
30,855	77	Woods, Good, HSG D
14,981	98	Water Surface, 0% imp, HSG D
59,443	83	Weighted Average
59,443		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	150	0.0366	0.11		**Sheet Flow, SHEET A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.8	215	0.0675	1.30		**Shallow Concentrated Flow, SHALLOW B-C** Woodland Kv= 5.0 fps
26.5	365	Total			

Subcatchment 2: 2



Summary for Subcatchment 3: 3

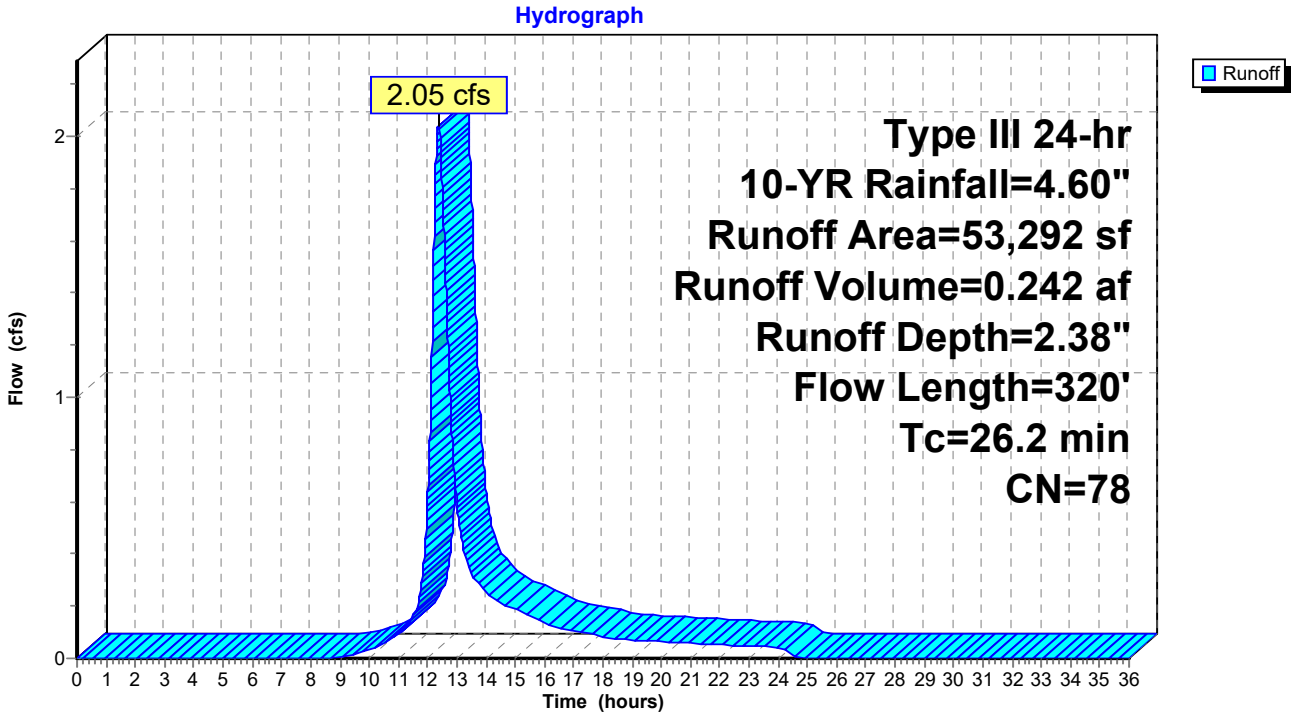
Runoff = 2.05 cfs @ 12.37 hrs, Volume= 0.242 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
49,580	77	Woods, Good, HSG D
3,712	98	Water Surface, 0% imp, HSG D
53,292	78	Weighted Average
53,292		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	150	0.0366	0.11		**Sheet Flow, SHEET A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.5	170	0.0520	1.14		**Shallow Concentrated Flow, SHALLOW B-C** Woodland Kv= 5.0 fps
26.2	320	Total			

Subcatchment 3: 3



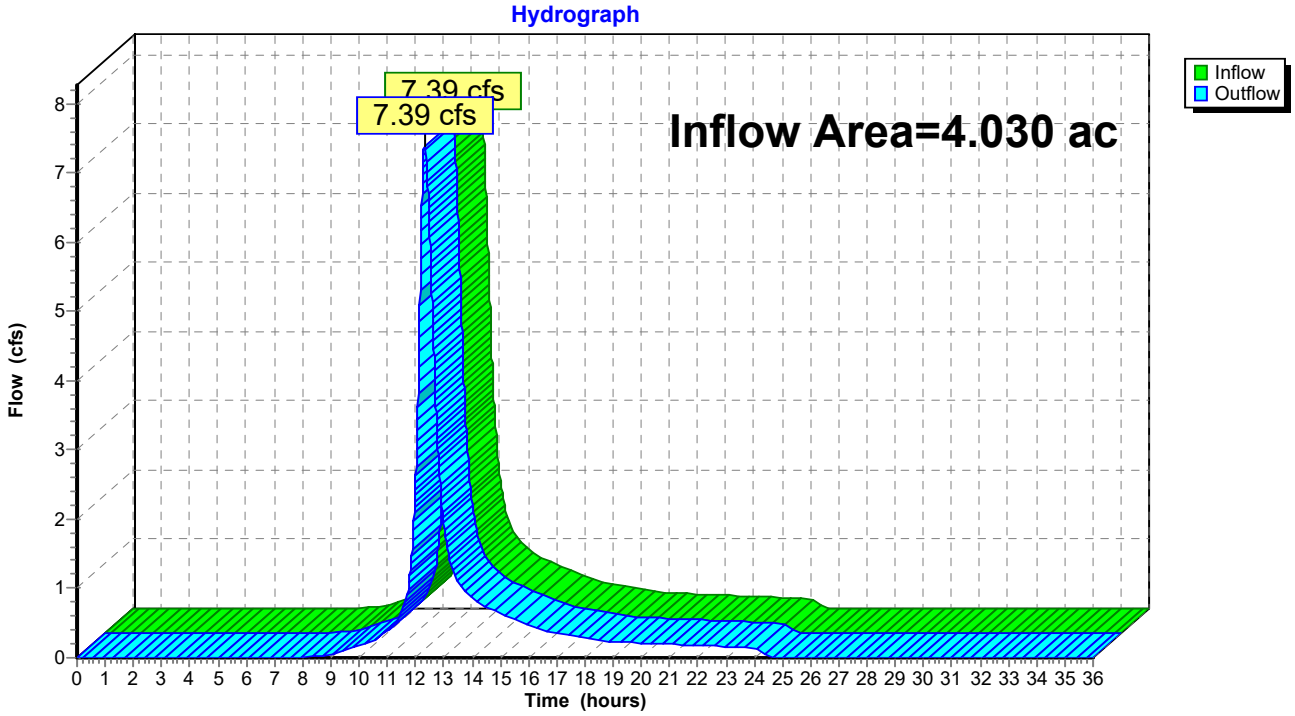
Summary for Reach POA: Total Runoff

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.030 ac, 0.35% Impervious, Inflow Depth = 2.55" for 10-YR event
Inflow = 7.39 cfs @ 12.33 hrs, Volume= 0.858 af
Outflow = 7.39 cfs @ 12.33 hrs, Volume= 0.858 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Reach POA: Total Runoff



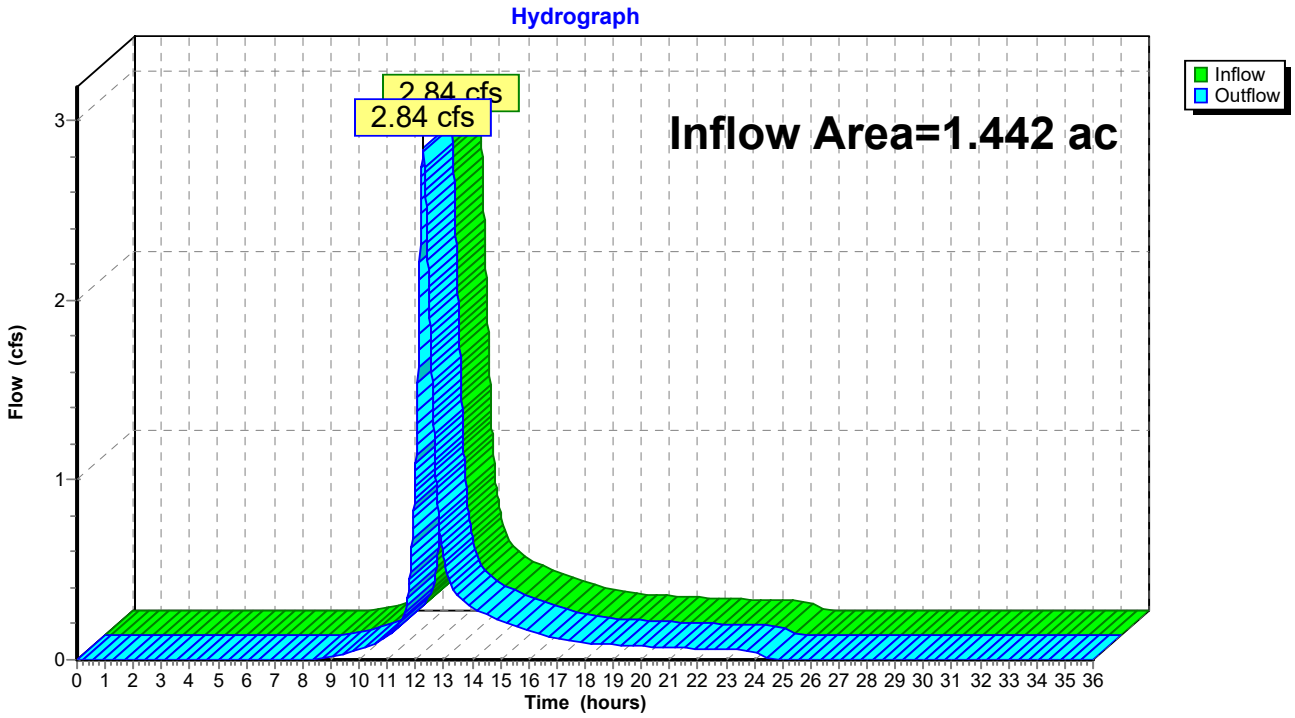
Summary for Reach R1: POI 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.442 ac, 0.98% Impervious, Inflow Depth = 2.46" for 10-YR event
Inflow = 2.84 cfs @ 12.27 hrs, Volume= 0.296 af
Outflow = 2.84 cfs @ 12.27 hrs, Volume= 0.296 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Reach R1: POI 1



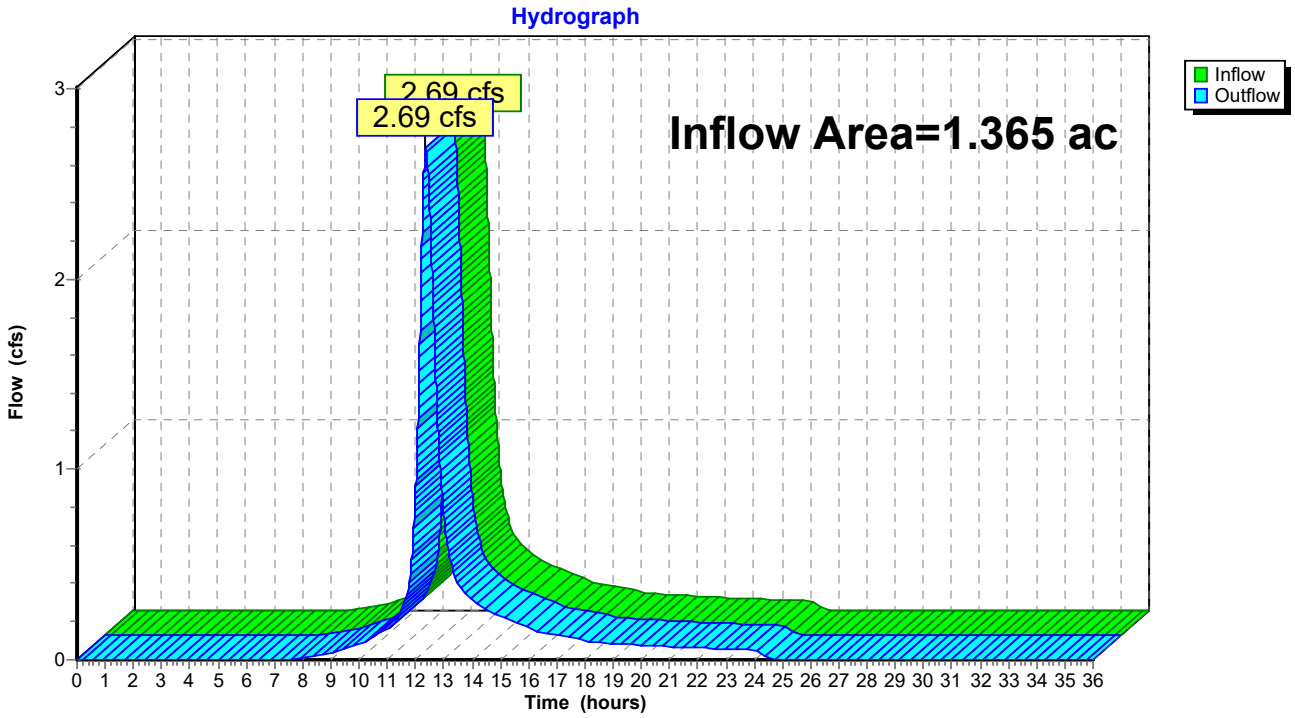
Summary for Reach R2: POI 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.365 ac, 0.00% Impervious, Inflow Depth = 2.81" for 10-YR event
Inflow = 2.69 cfs @ 12.36 hrs, Volume= 0.320 af
Outflow = 2.69 cfs @ 12.36 hrs, Volume= 0.320 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Reach R2: POI 2



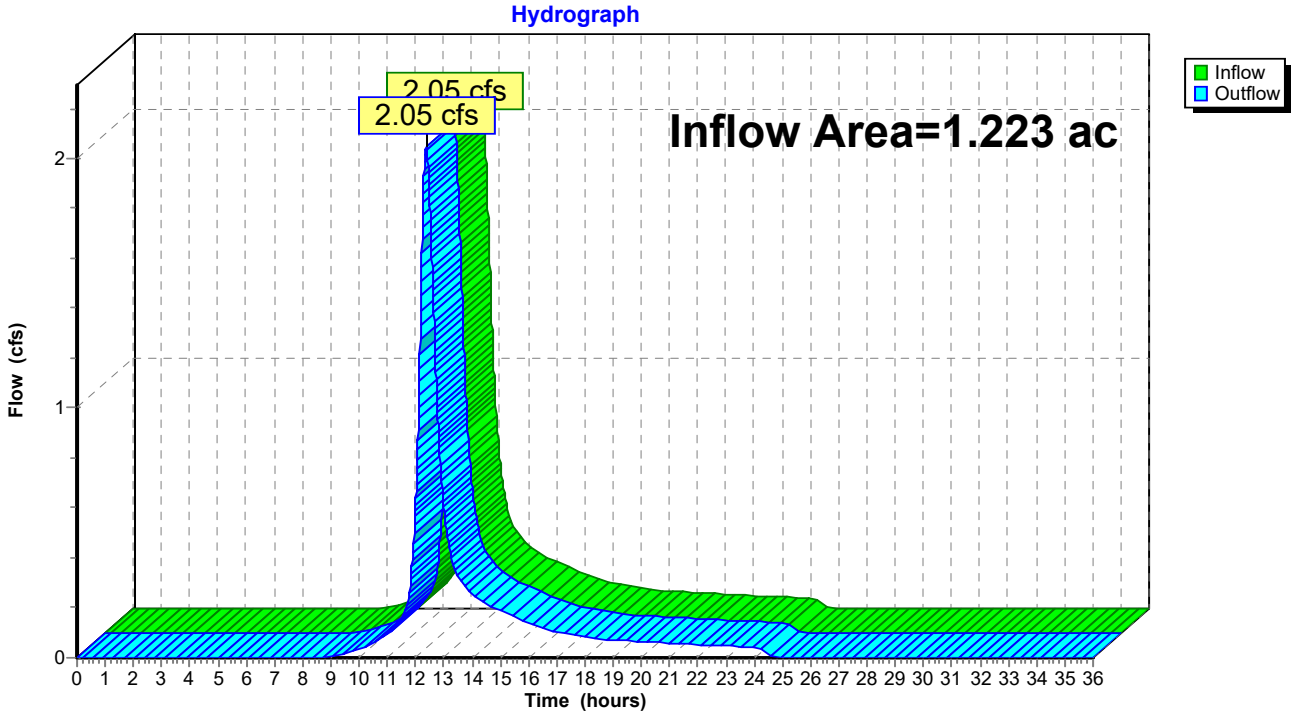
Summary for Reach R3: POI 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.223 ac, 0.00% Impervious, Inflow Depth = 2.38" for 10-YR event
Inflow = 2.05 cfs @ 12.37 hrs, Volume= 0.242 af
Outflow = 2.05 cfs @ 12.37 hrs, Volume= 0.242 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Reach R3: POI 3



Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: 1 Runoff Area=62,825 sf 0.98% Impervious Runoff Depth=3.50"
Flow Length=275' Tc=19.3 min CN=79 Runoff=4.05 cfs 0.421 af

Subcatchment 2: 2 Runoff Area=59,443 sf 0.00% Impervious Runoff Depth=3.91"
Flow Length=365' Tc=26.5 min CN=83 Runoff=3.71 cfs 0.444 af

Subcatchment 3: 3 Runoff Area=53,292 sf 0.00% Impervious Runoff Depth=3.40"
Flow Length=320' Tc=26.2 min CN=78 Runoff=2.94 cfs 0.347 af

Reach POA: Total Runoff Inflow=10.42 cfs 1.212 af
Outflow=10.42 cfs 1.212 af

Reach R1: POI 1 Inflow=4.05 cfs 0.421 af
Outflow=4.05 cfs 0.421 af

Reach R2: POI 2 Inflow=3.71 cfs 0.444 af
Outflow=3.71 cfs 0.444 af

Reach R3: POI 3 Inflow=2.94 cfs 0.347 af
Outflow=2.94 cfs 0.347 af

Total Runoff Area = 4.030 ac Runoff Volume = 1.212 af Average Runoff Depth = 3.61"
99.65% Pervious = 4.016 ac 0.35% Impervious = 0.014 ac

Summary for Subcatchment 1: 1

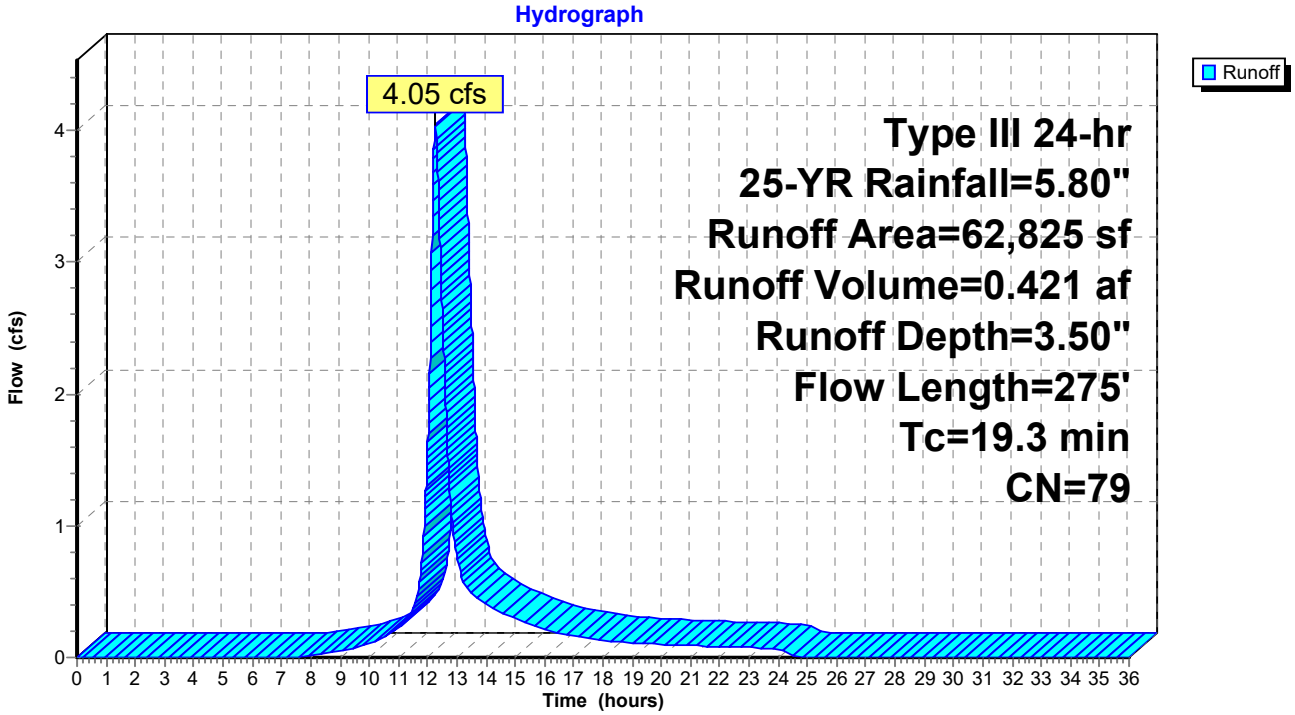
Runoff = 4.05 cfs @ 12.26 hrs, Volume= 0.421 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
39,751	80	>75% Grass cover, Good, HSG D
22,459	77	Woods, Good, HSG D
615	98	Paved parking, HSG D
62,825	79	Weighted Average
62,210		99.02% Pervious Area
615		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	150	0.0270	0.14		**Sheet Flow, SHEET A-B** Grass: Dense n= 0.240 P2= 3.10"
1.3	96	0.0300	1.21		**Shallow Concentrated Flow, SHALLOW B-C** Short Grass Pasture Kv= 7.0 fps
0.2	29	0.1550	1.97		**Shallow Concentrated Flow, SHALLOW C-D** Woodland Kv= 5.0 fps
19.3	275	Total			

Subcatchment 1: 1



Summary for Subcatchment 2: 2

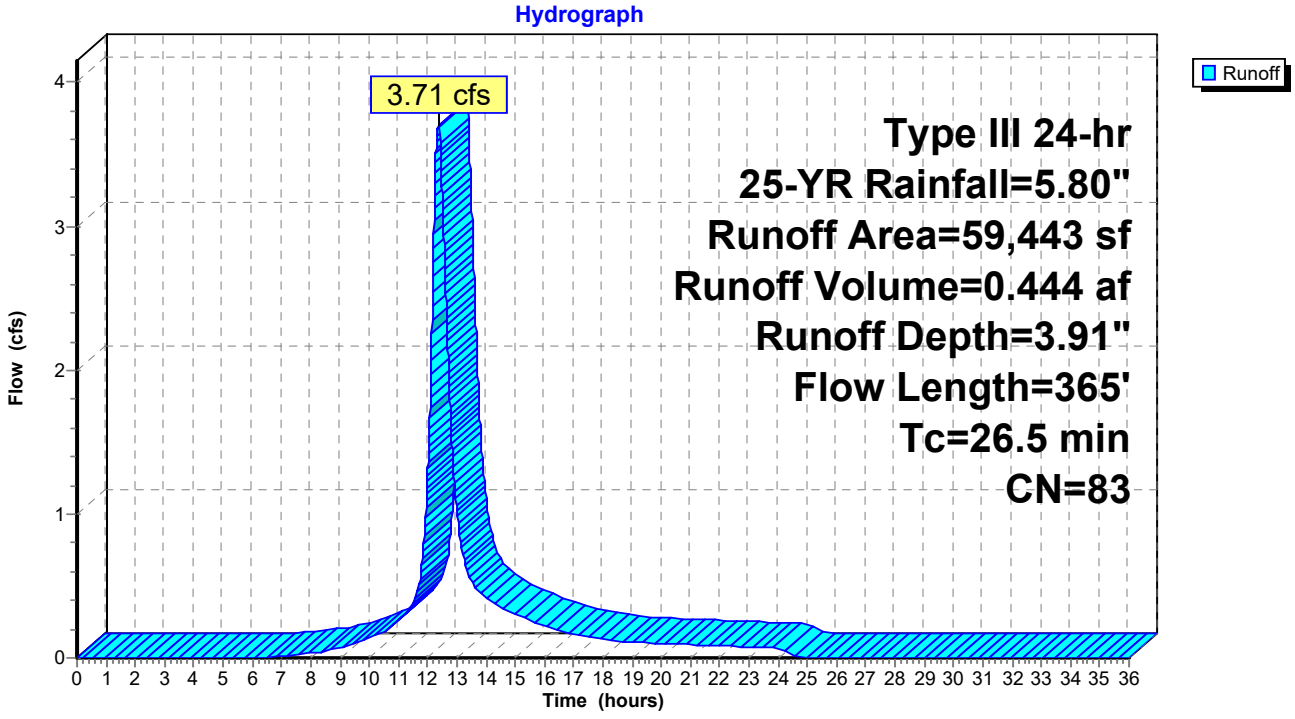
Runoff = 3.71 cfs @ 12.36 hrs, Volume= 0.444 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
13,607	80	>75% Grass cover, Good, HSG D
30,855	77	Woods, Good, HSG D
14,981	98	Water Surface, 0% imp, HSG D
59,443	83	Weighted Average
59,443		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	150	0.0366	0.11		**Sheet Flow, SHEET A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.8	215	0.0675	1.30		**Shallow Concentrated Flow, SHALLOW B-C** Woodland Kv= 5.0 fps
26.5	365	Total			

Subcatchment 2: 2



Summary for Subcatchment 3: 3

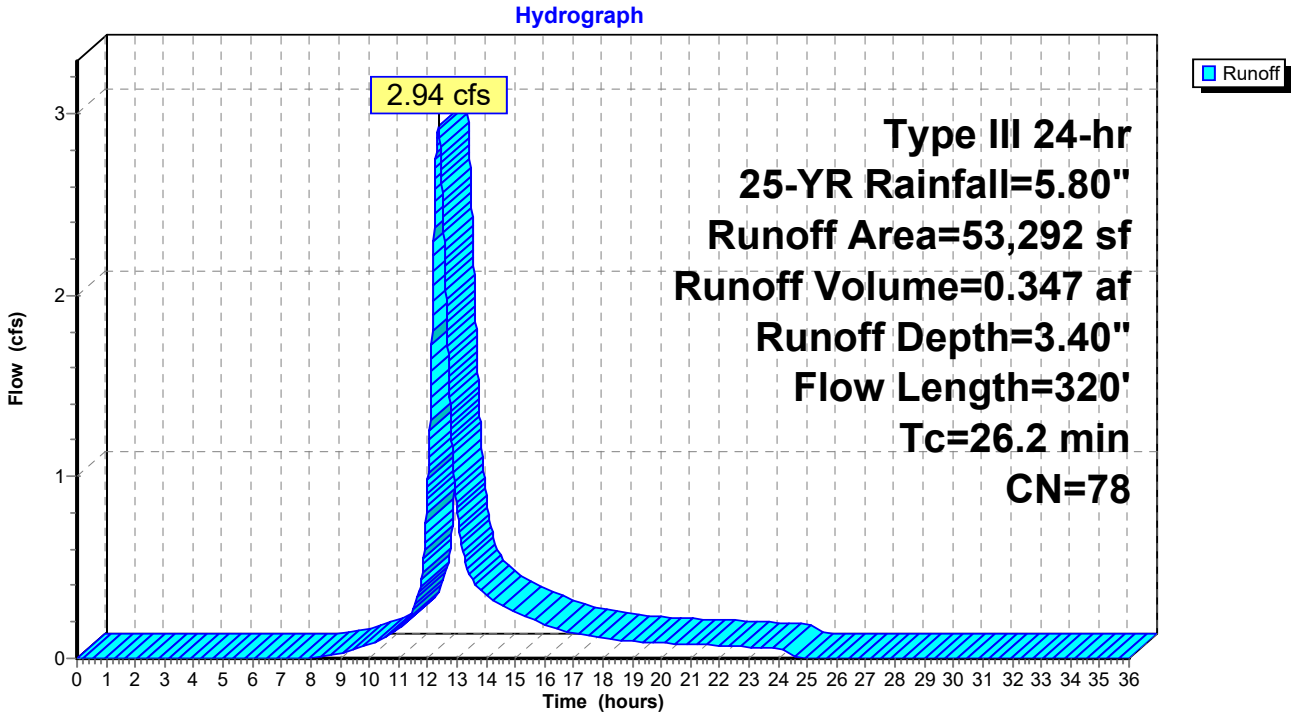
Runoff = 2.94 cfs @ 12.37 hrs, Volume= 0.347 af, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
49,580	77	Woods, Good, HSG D
3,712	98	Water Surface, 0% imp, HSG D
53,292	78	Weighted Average
53,292		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	150	0.0366	0.11		**Sheet Flow, SHEET A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.5	170	0.0520	1.14		**Shallow Concentrated Flow, SHALLOW B-C** Woodland Kv= 5.0 fps
26.2	320	Total			

Subcatchment 3: 3



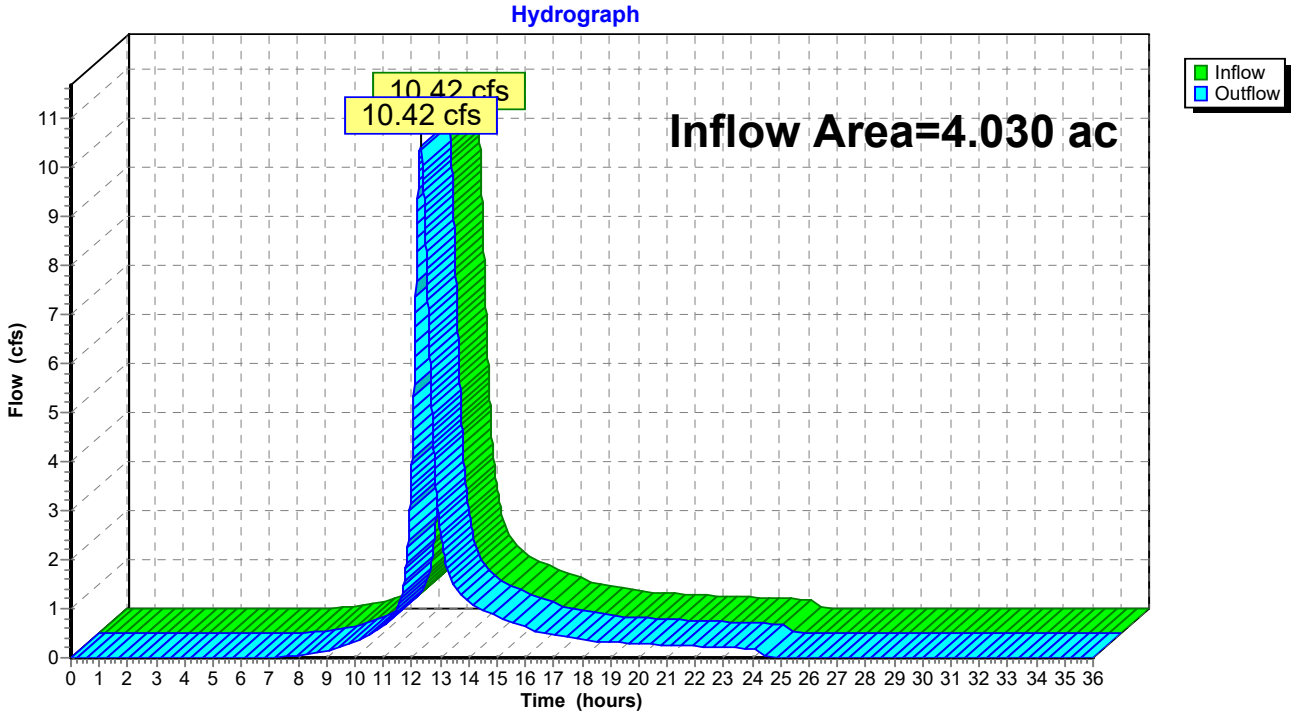
Summary for Reach POA: Total Runoff

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.030 ac, 0.35% Impervious, Inflow Depth = 3.61" for 25-YR event
Inflow = 10.42 cfs @ 12.32 hrs, Volume= 1.212 af
Outflow = 10.42 cfs @ 12.32 hrs, Volume= 1.212 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Reach POA: Total Runoff



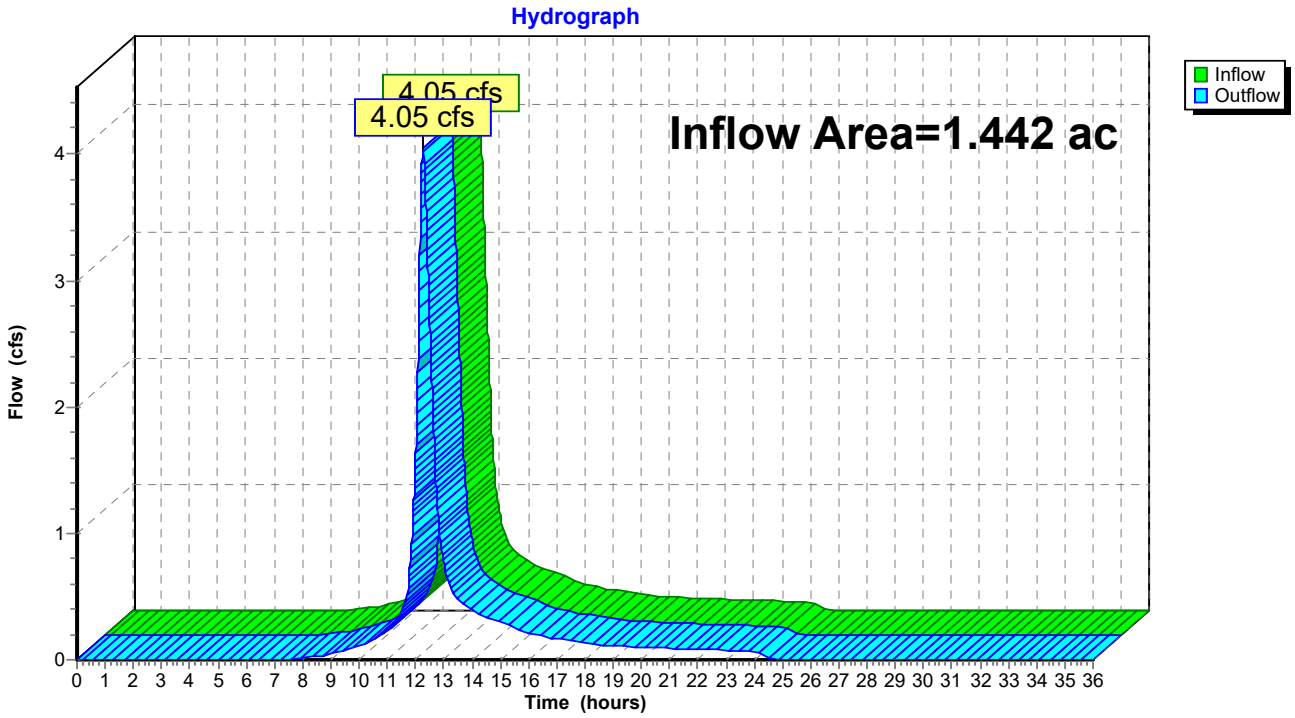
Summary for Reach R1: POI 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.442 ac, 0.98% Impervious, Inflow Depth = 3.50" for 25-YR event
Inflow = 4.05 cfs @ 12.26 hrs, Volume= 0.421 af
Outflow = 4.05 cfs @ 12.26 hrs, Volume= 0.421 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Reach R1: POI 1



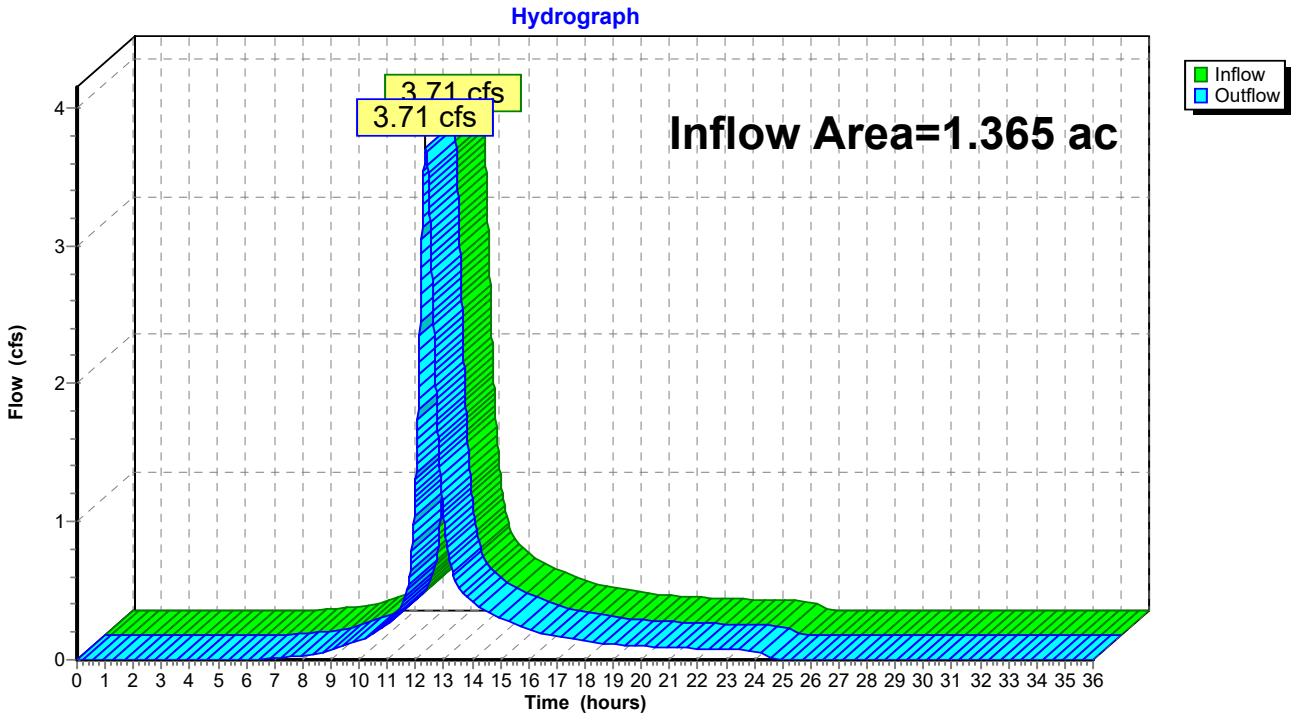
Summary for Reach R2: POI 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.365 ac, 0.00% Impervious, Inflow Depth = 3.91" for 25-YR event
Inflow = 3.71 cfs @ 12.36 hrs, Volume= 0.444 af
Outflow = 3.71 cfs @ 12.36 hrs, Volume= 0.444 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Reach R2: POI 2



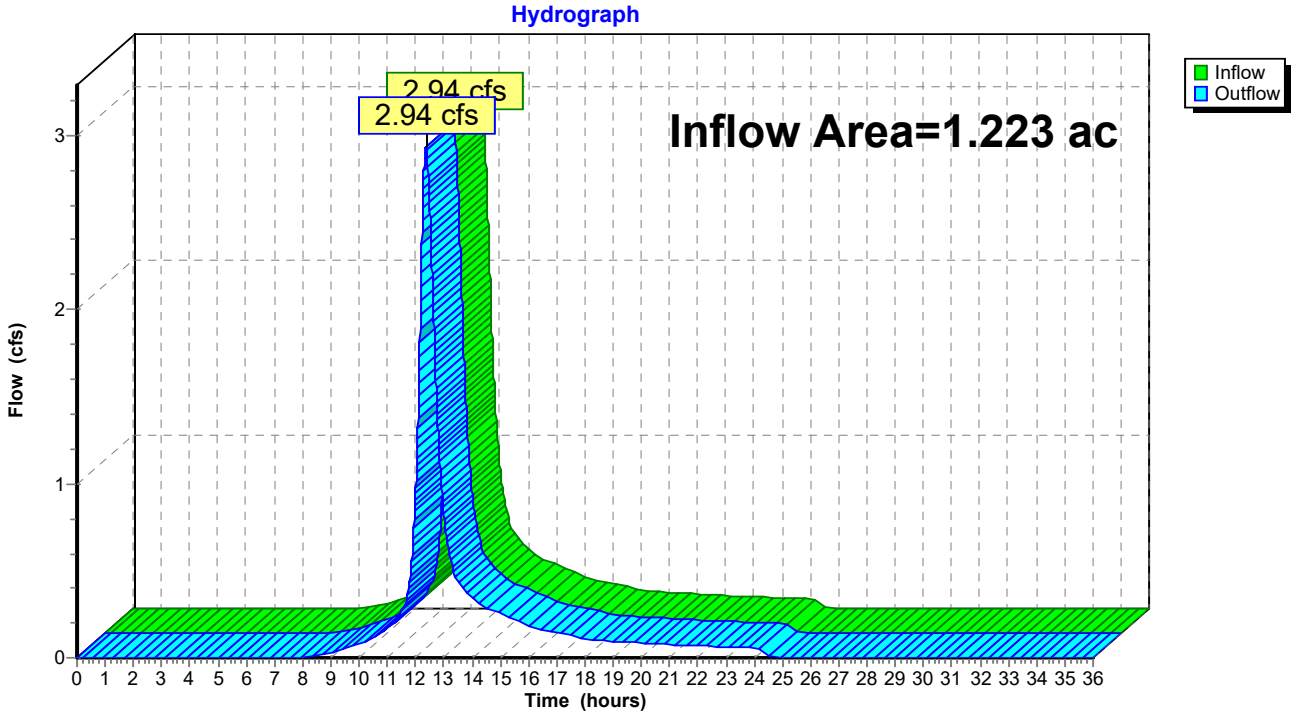
Summary for Reach R3: POI 3

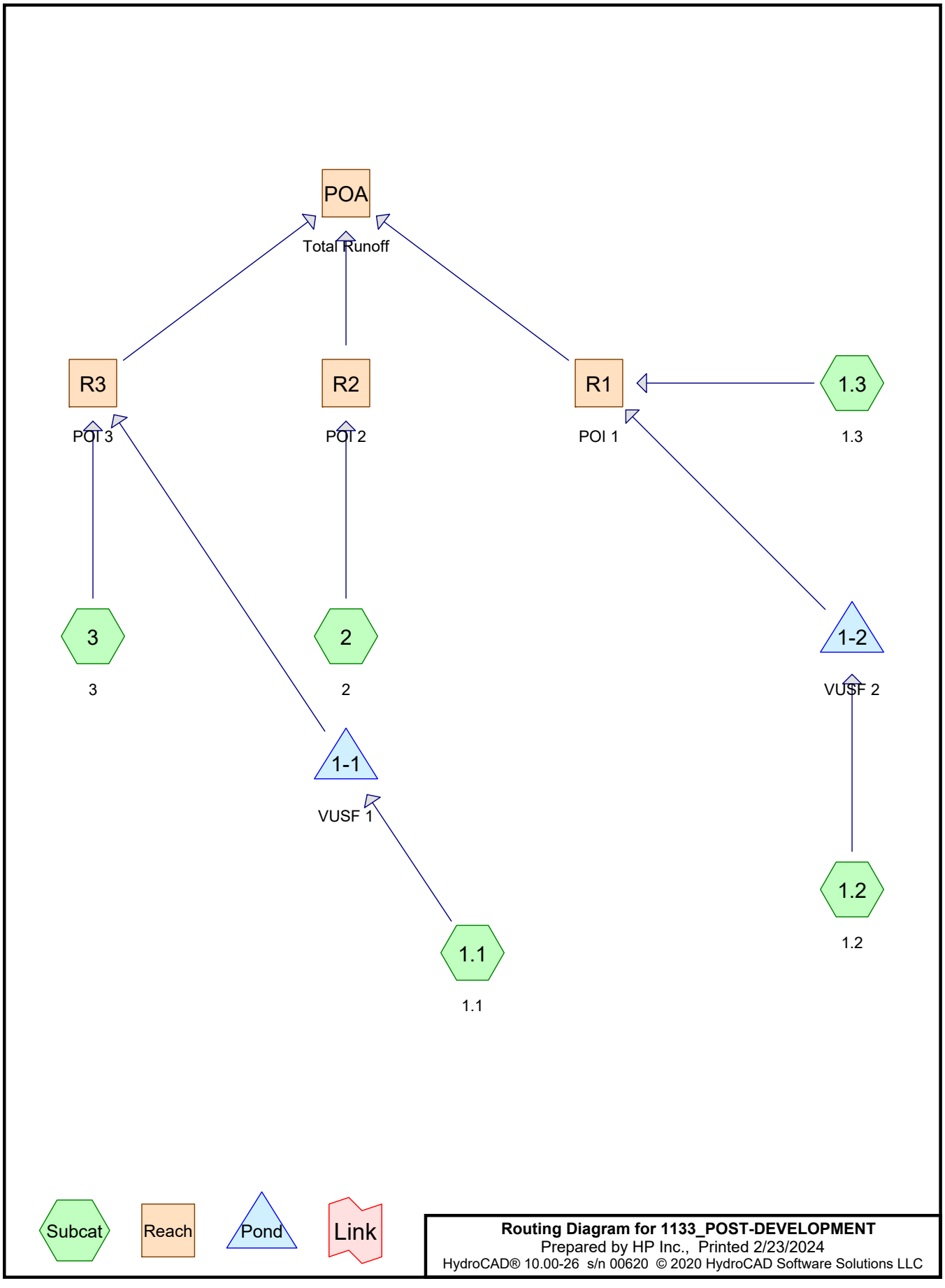
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.223 ac, 0.00% Impervious, Inflow Depth = 3.40" for 25-YR event
Inflow = 2.94 cfs @ 12.37 hrs, Volume= 0.347 af
Outflow = 2.94 cfs @ 12.37 hrs, Volume= 0.347 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Reach R3: POI 3




POA
Total Runoff
R3
R2
R1
1.3
POI 3
POI 2
POI 1
1.3
3
2
1-2
3
2
VUSF 2
1-1
VUSF 1
1.2
1.1
1.2
1.1
Subcat
Reach
Pond
Link
Routing Diagram for 1133_POST-DEVELOPMENT
Prepared by HP Inc., Printed 2/23/2024
HydroCAD® 10.00-26 s/n 00620 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.824	39	>75% Grass cover, Good, HSG A (1.1, 1.2, 2, 3)
0.523	80	>75% Grass cover, Good, HSG D (1.3)
0.660	98	Paved parking, HSG A (1.2, 1.3)
0.900	98	Paved parking, HSG D (1.1)
0.429	98	Water Surface, 0% imp, HSG A (2, 3)
0.384	30	Woods, Good, HSG A (2, 3)
0.310	77	Woods, Good, HSG D (1.3)
4.030	**76**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.297	HSG A	1.1, 1.2, 1.3, 2, 3
0.000	HSG B	
0.000	HSG C	
1.732	HSG D	1.1, 1.3
0.000	Other	
4.030		**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
0.824	0.000	0.000	0.523	0.000	1.347	>75% Grass cover, Good	1.1, 1.2, 1.3, 2, 3
0.660	0.000	0.000	0.900	0.000	1.560	Paved parking	1.1, 1.2, 1.3
0.429	0.000	0.000	0.000	0.000	0.429	Water Surface, 0% imp	2, 3
0.384	0.000	0.000	0.310	0.000	0.694	Woods, Good	1.3, 2, 3
2.297	**0.000**	**0.000**	**1.732**	**0.000**	**4.030**	**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	1-1	71.30	70.50	126.0	0.0063	0.013	12.0	0.0	0.0
2	1-2	71.45	68.72	30.0	0.0910	0.013	12.0	0.0	0.0

Time span=0.00-52.00 hrs, dt=0.01 hrs, 5201 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 1.1: 1.1 Runoff Area=50,102 sf 78.22% Impervious Runoff Depth=1.67"
Tc=6.0 min CN=85 Runoff=2.26 cfs 0.160 af

Subcatchment 1.2: 1.2 Runoff Area=38,851 sf 65.33% Impervious Runoff Depth=1.20"
Tc=6.0 min CN=78 Runoff=1.23 cfs 0.089 af

Subcatchment 1.3: 1.3 Runoff Area=39,665 sf 8.55% Impervious Runoff Depth=1.39"
Tc=6.0 min CN=81 Runoff=1.47 cfs 0.106 af

Subcatchment 2: 2 Runoff Area=35,540 sf 0.00% Impervious Runoff Depth=0.40"
Tc=6.0 min CN=61 Runoff=0.23 cfs 0.027 af

Subcatchment 3: 3 Runoff Area=11,372 sf 0.00% Impervious Runoff Depth=0.22"
Tc=6.0 min CN=55 Runoff=0.02 cfs 0.005 af

Reach POA: Total Runoff Inflow=1.76 cfs 0.382 af
Outflow=1.76 cfs 0.382 af

Reach R1: POI 1 Inflow=1.50 cfs 0.195 af
Outflow=1.50 cfs 0.195 af

Reach R2: POI 2 Inflow=0.23 cfs 0.027 af
Outflow=0.23 cfs 0.027 af

Reach R3: POI 3 Inflow=0.15 cfs 0.160 af
Outflow=0.15 cfs 0.160 af

Pond 1-1: VUSF 1 Peak Elev=75.27' Storage=4,185 cf Inflow=2.26 cfs 0.160 af
Outflow=0.14 cfs 0.155 af

Pond 1-2: VUSF 2 Peak Elev=75.18' Storage=2,330 cf Inflow=1.23 cfs 0.089 af
Outflow=0.05 cfs 0.089 af

Total Runoff Area = 4.030 ac Runoff Volume = 0.387 af Average Runoff Depth = 1.15"
61.28% Pervious = 2.469 ac 38.72% Impervious = 1.560 ac

Summary for Subcatchment 1.1: 1.1

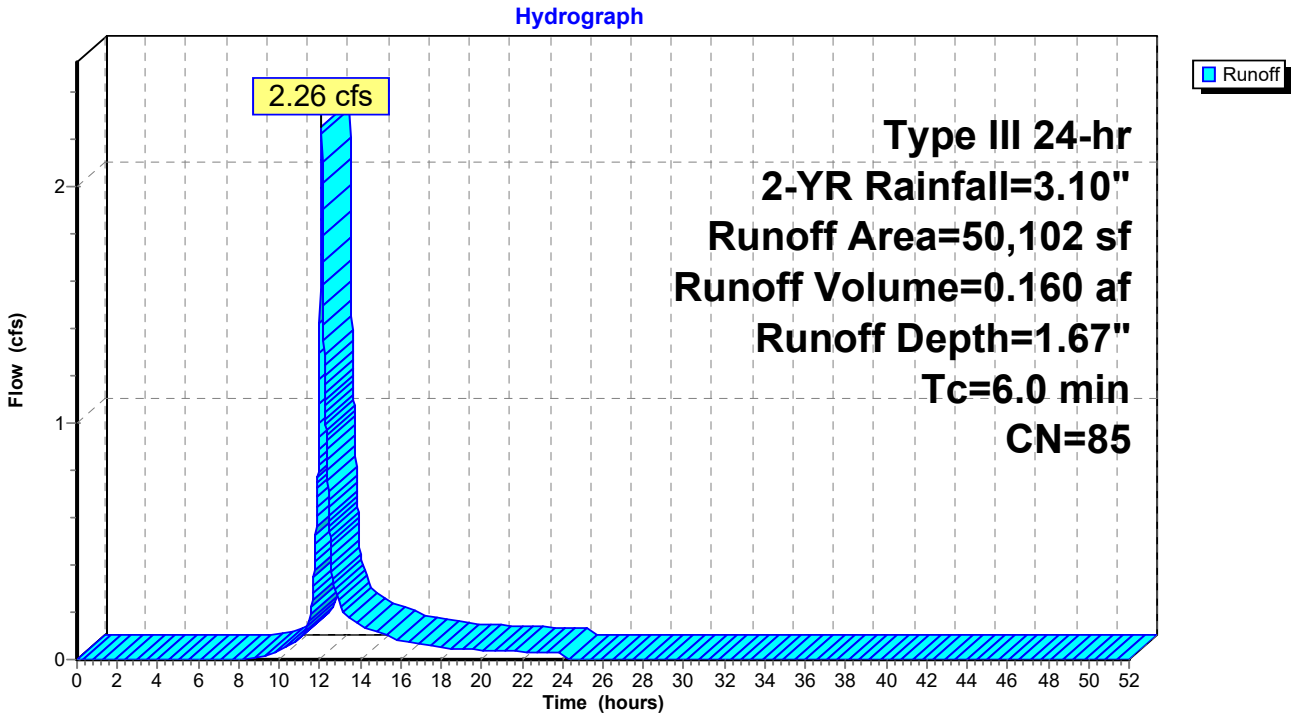
Runoff = 2.26 cfs @ 12.09 hrs, Volume= 0.160 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
10,913	39	>75% Grass cover, Good, HSG A
39,189	98	Paved parking, HSG D
50,102	85	Weighted Average
10,913		21.78% Pervious Area
39,189		78.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 1.1: 1.1



Summary for Subcatchment 1.2: 1.2

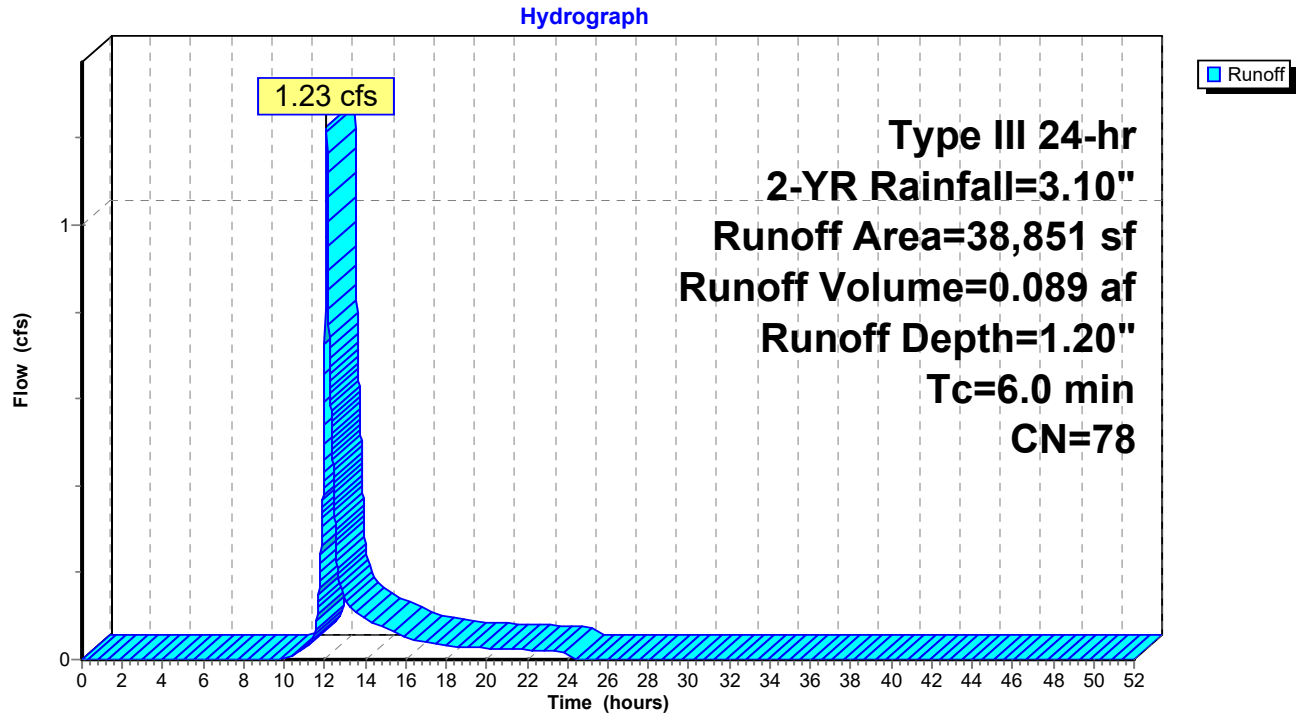
Runoff = 1.23 cfs @ 12.09 hrs, Volume= 0.089 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
25,381	98	Paved parking, HSG A
13,470	39	>75% Grass cover, Good, HSG A
38,851	78	Weighted Average
13,470		34.67% Pervious Area
25,381		65.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 1.2: 1.2



Summary for Subcatchment 1.3: 1.3

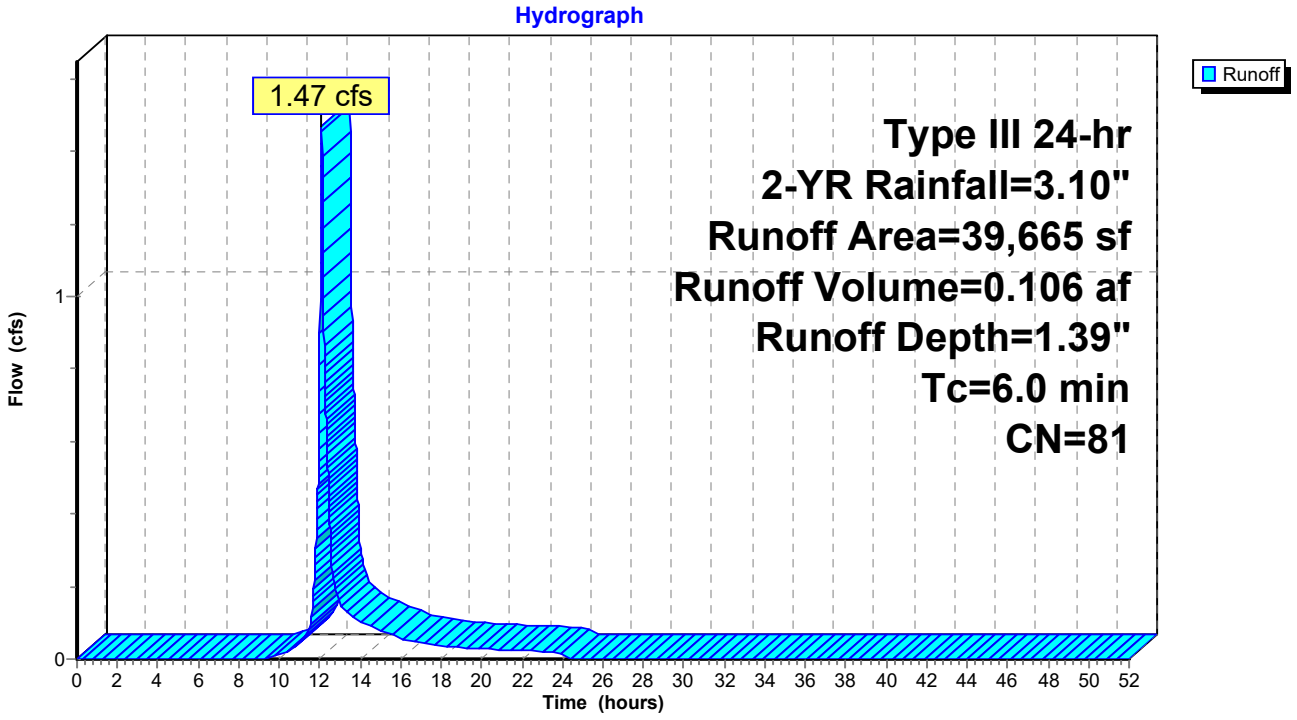
Runoff = 1.47 cfs @ 12.09 hrs, Volume= 0.106 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
22,776	80	>75% Grass cover, Good, HSG D
13,499	77	Woods, Good, HSG D
3,390	98	Paved parking, HSG A
39,665	81	Weighted Average
36,275		91.45% Pervious Area
3,390		8.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 1.3: 1.3



Summary for Subcatchment 2: 2

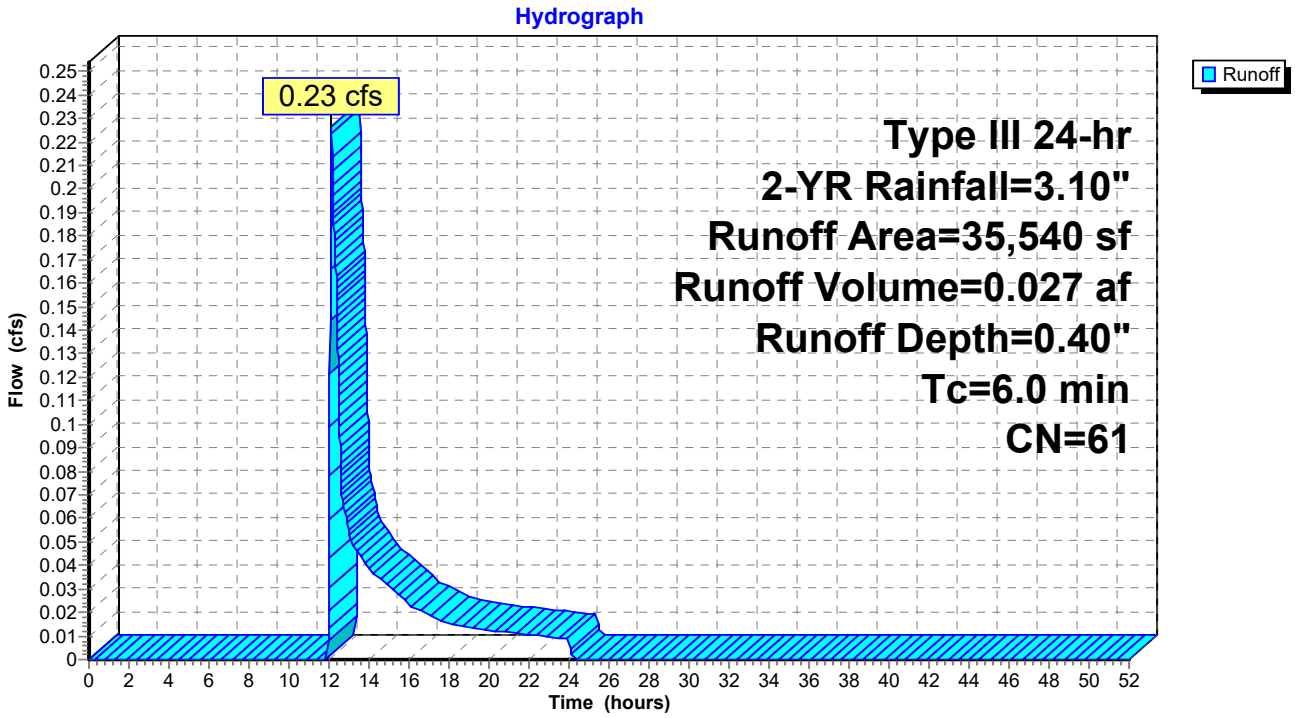
Runoff = 0.23 cfs @ 12.13 hrs, Volume= 0.027 af, Depth= 0.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
14,981	98	Water Surface, 0% imp, HSG A
7,560	39	>75% Grass cover, Good, HSG A
12,999	30	Woods, Good, HSG A
35,540	61	Weighted Average
35,540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 2: 2



Summary for Subcatchment 3: 3

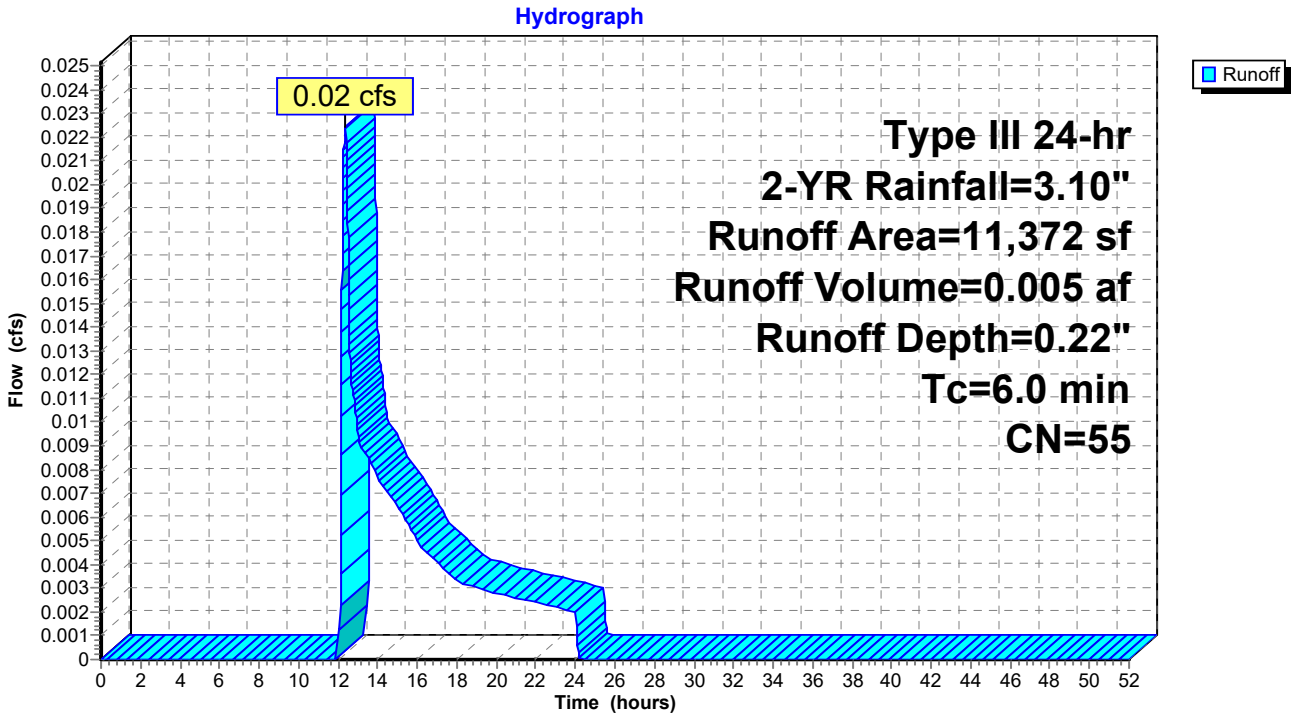
Runoff = 0.02 cfs @ 12.35 hrs, Volume= 0.005 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
3,712	98	Water Surface, 0% imp, HSG A
3,943	39	>75% Grass cover, Good, HSG A
3,717	30	Woods, Good, HSG A
11,372	55	Weighted Average
11,372		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 3: 3

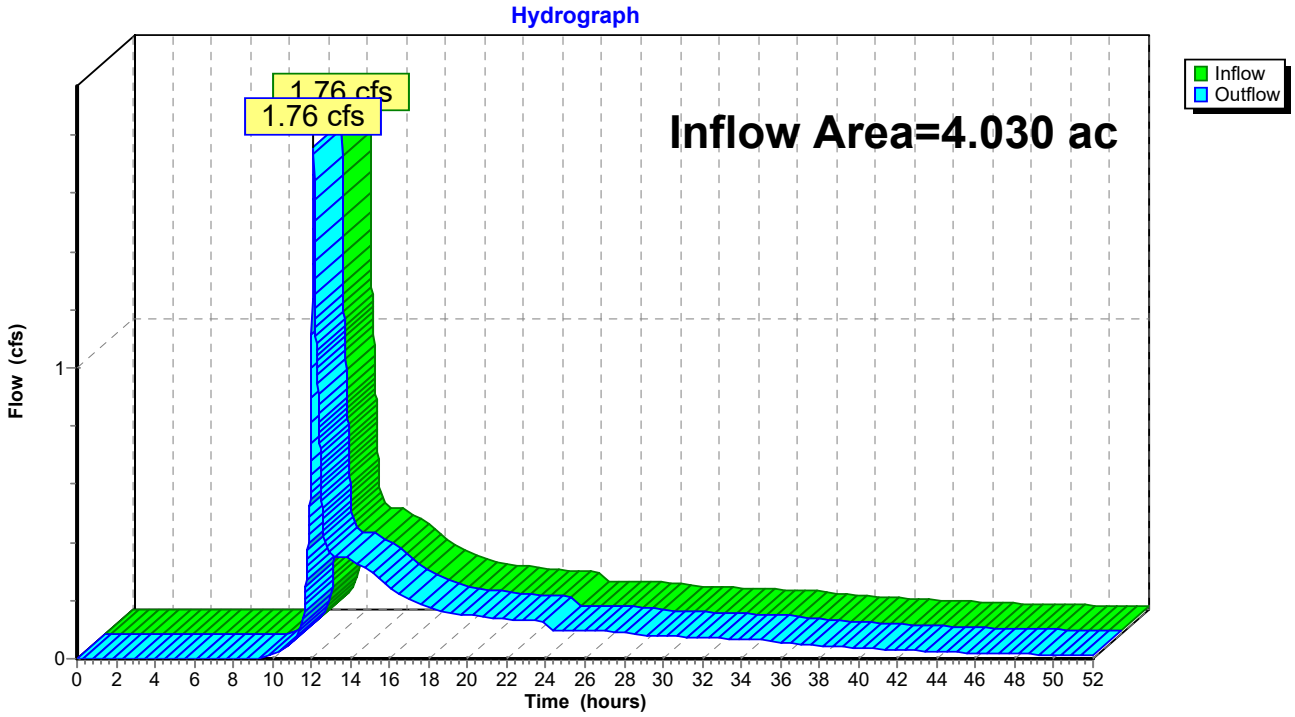


Summary for Reach POA: Total Runoff

Inflow Area = 4.030 ac, 38.72% Impervious, Inflow Depth > 1.14" for 2-YR event
Inflow = 1.76 cfs @ 12.10 hrs, Volume= 0.382 af
Outflow = 1.76 cfs @ 12.10 hrs, Volume= 0.382 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs

Reach POA: Total Runoff

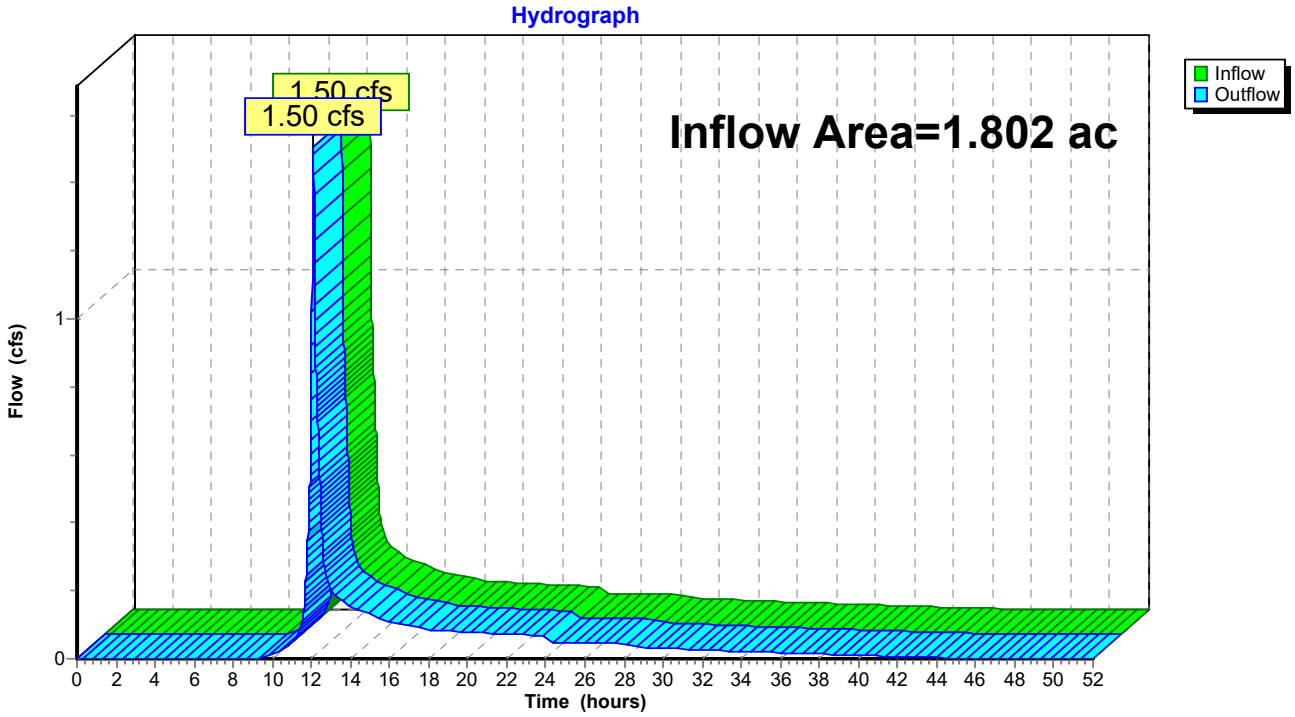


Summary for Reach R1: POI 1

Inflow Area = 1.802 ac, 36.64% Impervious, Inflow Depth > 1.30" for 2-YR event
Inflow = 1.50 cfs @ 12.09 hrs, Volume= 0.195 af
Outflow = 1.50 cfs @ 12.09 hrs, Volume= 0.195 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs

Reach R1: POI 1

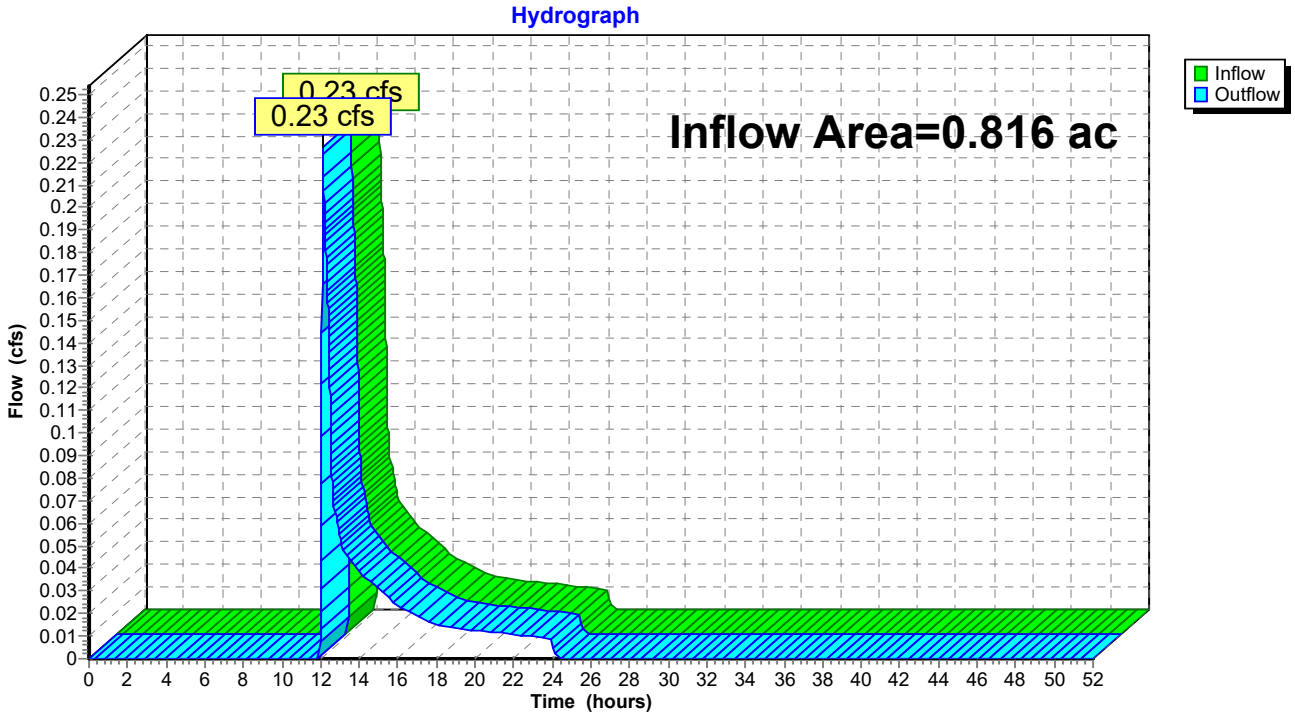


Summary for Reach R2: POI 2

Inflow Area = 0.816 ac, 0.00% Impervious, Inflow Depth = 0.40" for 2-YR event
Inflow = 0.23 cfs @ 12.13 hrs, Volume= 0.027 af
Outflow = 0.23 cfs @ 12.13 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs

Reach R2: POI 2

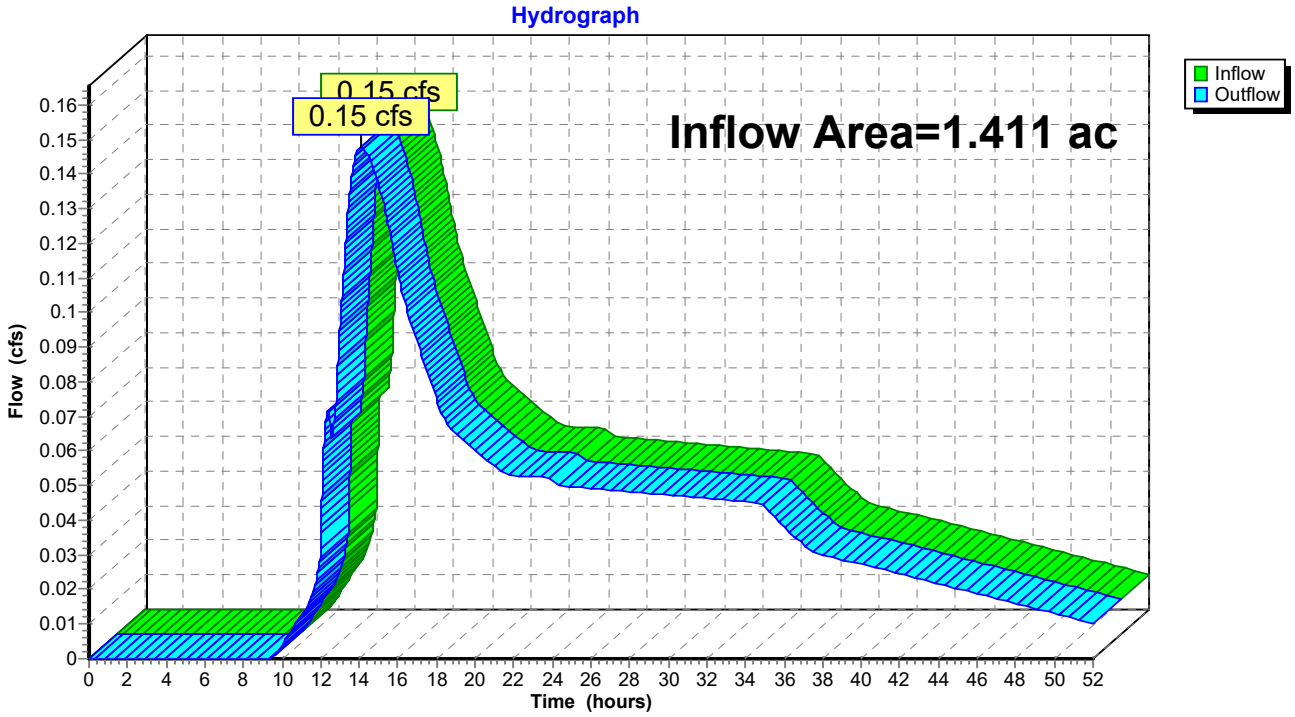


Summary for Reach R3: POI 3

Inflow Area = 1.411 ac, 63.75% Impervious, Inflow Depth > 1.36" for 2-YR event
Inflow = 0.15 cfs @ 14.07 hrs, Volume= 0.160 af
Outflow = 0.15 cfs @ 14.07 hrs, Volume= 0.160 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs

Reach R3: POI 3



Summary for Pond 1-1: VUSF 1

Inflow Area = 1.150 ac, 78.22% Impervious, Inflow Depth = 1.67" for 2-YR event
Inflow = 2.26 cfs @ 12.09 hrs, Volume= 0.160 af
Outflow = 0.14 cfs @ 14.11 hrs, Volume= 0.155 af, Atten= 94%, Lag= 121.3 min
Primary = 0.14 cfs @ 14.11 hrs, Volume= 0.155 af

Routing by Stor-Ind method, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Peak Elev= 75.27' @ 14.11 hrs Surf.Area= 7,425 sf Storage= 4,185 cf

Plug-Flow detention time= 721.7 min calculated for 0.155 af (97% of inflow)
Center-of-Mass det. time= 704.6 min (1,532.1 - 827.5)

Volume	Invert	Avail.Storage	Storage Description
#1	74.30'	14,007 cf	**Storage (Prismatic)** Listed below (Recalc)
#2	72.80'	327 cf	**Soil Filter (Prismatic)** Listed below (Recalc) 3,267 cf Overall x 10.0% Voids
#3	71.30'	1,307 cf	**Stone & Gravel Layer (Prismatic)** Listed below (Recalc) 3,267 cf Overall x 40.0% Voids
		15,641 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.30	2,178	0	0
75.00	2,809	1,745	1,745
76.00	3,755	3,282	5,027
77.00	4,964	4,360	9,387
77.85	5,907	4,620	14,007

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
72.80	2,178	0	0
74.30	2,178	3,267	3,267

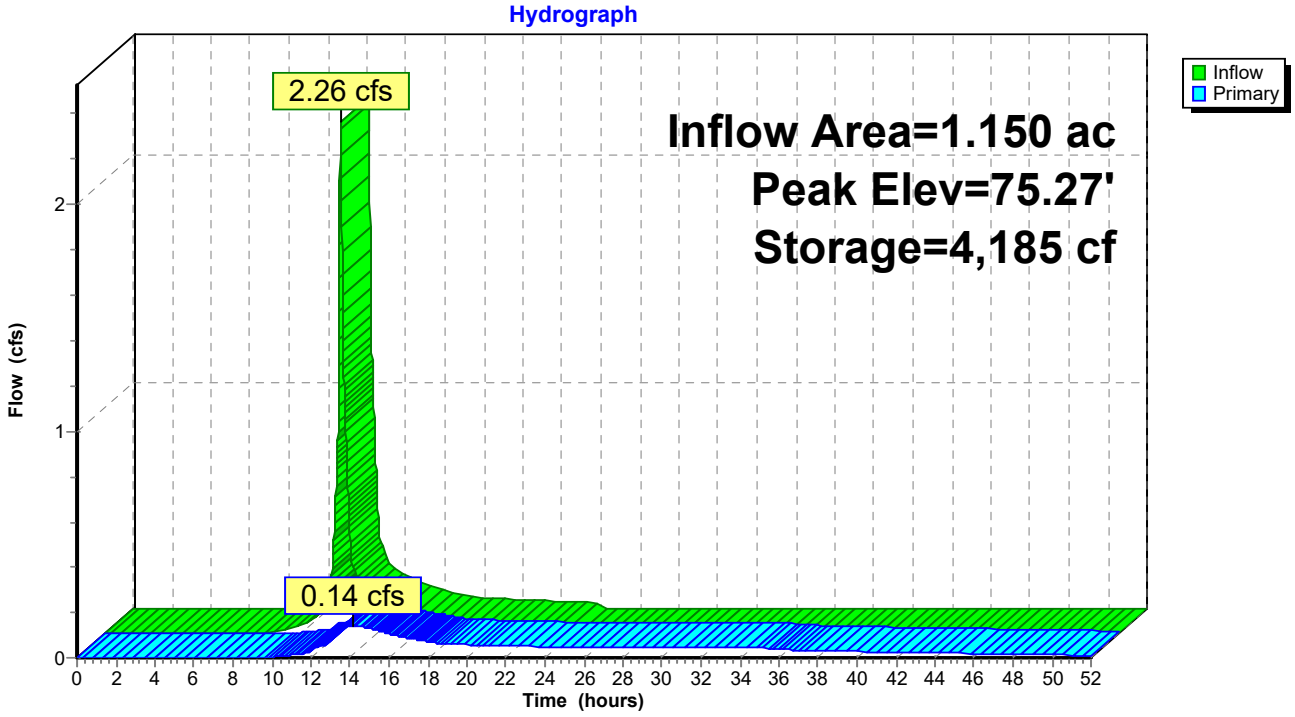
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
71.30	2,178	0	0
72.80	2,178	3,267	3,267

Device	Routing	Invert	Outlet Devices
#1	Primary	71.30'	**12.0" Round Culvert** L= 126.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.30' / 70.50' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	71.35'	**1.0" Vert. WQ Orifice** C= 0.600
#3	Device 1	75.10'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	75.83'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#5	Device 1	77.00'	**8.0" Vert. Beehive OCS RIM** C= 0.600
#6	Primary	77.35'	**10.0' long x 7.0' breadth Emergency Spillway**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=0.14 cfs @ 14.11 hrs HW=75.27' (Free Discharge)
- **1=Culvert** (Passes 0.14 cfs of 5.06 cfs potential flow)
  - **2=WQ Orifice** (Orifice Controls 0.05 cfs @ 9.49 fps)
  - **3=Orifice/Grate** (Orifice Controls 0.09 cfs @ 1.42 fps)
  - **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
  - **5=Beehive OCS RIM** (Controls 0.00 cfs)
- **6=Emergency Spillway** (Controls 0.00 cfs)

Pond 1-1: VUSF 1



Summary for Pond 1-2: VUSF 2

Inflow Area = 0.892 ac, 65.33% Impervious, Inflow Depth = 1.20" for 2-YR event
Inflow = 1.23 cfs @ 12.09 hrs, Volume= 0.089 af
Outflow = 0.05 cfs @ 16.07 hrs, Volume= 0.089 af, Atten= 96%, Lag= 238.3 min
Primary = 0.05 cfs @ 16.07 hrs, Volume= 0.089 af

Routing by Stor-Ind method, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Peak Elev= 75.18' @ 16.07 hrs Surf.Area= 4,994 sf Storage= 2,330 cf

Plug-Flow detention time= 569.8 min calculated for 0.089 af (100% of inflow)
Center-of-Mass det. time= 569.5 min (1,420.4 - 850.9)

Volume	Invert	Avail.Storage	Storage Description
#1	74.50'	8,741 cf	**Storage (Prismatic)** Listed below (Recalc)
#2	73.00'	232 cf	**Soil Filter (Prismatic)** Listed below (Recalc) 2,319 cf Overall x 10.0% Voids
#3	71.50'	928 cf	**Stone & Gravel Layer (Prismatic)** Listed below (Recalc) 2,319 cf Overall x 40.0% Voids
		9,900 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.50	1,546	0	0
75.00	1,803	837	837
76.00	2,356	2,080	2,917
77.00	3,124	2,740	5,657
77.90	3,729	3,084	8,741

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	1,546	0	0
74.50	1,546	2,319	2,319

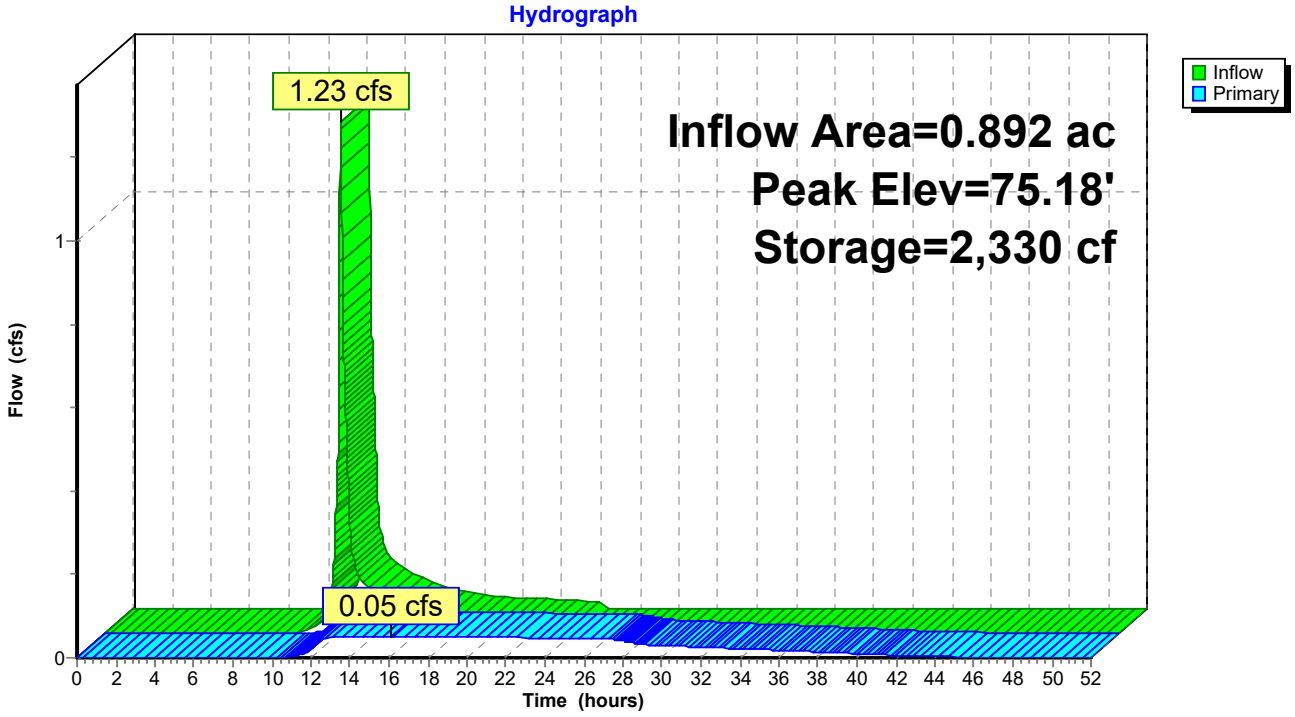
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
71.50	1,546	0	0
73.00	1,546	2,319	2,319

Device	Routing	Invert	Outlet Devices
#1	Primary	71.45'	**12.0" Round Culvert** L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.45' / 68.72' S= 0.0910 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	71.50'	**1.0" Vert. WQ Orifice** C= 0.600
#3	Device 1	75.35'	**4.0" Vert. Quantity Orifice** C= 0.600
#4	Device 1	75.85'	**4.0' long x 0.6' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 Coef. (English) 2.78 2.87 3.00 3.20 3.25 3.27 3.30 3.31 3.32
#5	Device 1	77.15'	**8.0" Vert. Beehive OCS RIM** C= 0.600
#6	Primary	77.40'	**10.0' long x 7.0' breadth Emergency Spillway**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=0.05 cfs @ 16.07 hrs HW=75.18' (Free Discharge)
- **1=Culvert** (Passes 0.05 cfs of 5.37 cfs potential flow)
  - **2=WQ Orifice** (Orifice Controls 0.05 cfs @ 9.18 fps)
  - **3=Quantity Orifice** (Controls 0.00 cfs)
  - **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
  - **5=Beehive OCS RIM** (Controls 0.00 cfs)
- **6=Emergency Spillway** (Controls 0.00 cfs)

Pond 1-2: VUSF 2



Time span=0.00-52.00 hrs, dt=0.01 hrs, 5201 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 1.1: 1.1 Runoff Area=50,102 sf 78.22% Impervious Runoff Depth=3.00"
Tc=6.0 min CN=85 Runoff=4.02 cfs 0.288 af

Subcatchment 1.2: 1.2 Runoff Area=38,851 sf 65.33% Impervious Runoff Depth=2.38"
Tc=6.0 min CN=78 Runoff=2.48 cfs 0.177 af

Subcatchment 1.3: 1.3 Runoff Area=39,665 sf 8.55% Impervious Runoff Depth=2.63"
Tc=6.0 min CN=81 Runoff=2.81 cfs 0.200 af

Subcatchment 2: 2 Runoff Area=35,540 sf 0.00% Impervious Runoff Depth=1.14"
Tc=6.0 min CN=61 Runoff=0.96 cfs 0.077 af

Subcatchment 3: 3 Runoff Area=11,372 sf 0.00% Impervious Runoff Depth=0.79"
Tc=6.0 min CN=55 Runoff=0.18 cfs 0.017 af

Reach POA: Total Runoff Inflow=4.09 cfs 0.752 af
Outflow=4.09 cfs 0.752 af

Reach R1: POI 1 Inflow=2.86 cfs 0.376 af
Outflow=2.86 cfs 0.376 af

Reach R2: POI 2 Inflow=0.96 cfs 0.077 af
Outflow=0.96 cfs 0.077 af

Reach R3: POI 3 Inflow=0.83 cfs 0.299 af
Outflow=0.83 cfs 0.299 af

Pond 1-1: VUSF 1 Peak Elev=75.85' Storage=6,094 cf Inflow=4.02 cfs 0.288 af
Outflow=0.76 cfs 0.281 af

Pond 1-2: VUSF 2 Peak Elev=75.85' Storage=3,735 cf Inflow=2.48 cfs 0.177 af
Outflow=0.30 cfs 0.176 af

Total Runoff Area = 4.030 ac Runoff Volume = 0.758 af Average Runoff Depth = 2.26"
61.28% Pervious = 2.469 ac 38.72% Impervious = 1.560 ac

Summary for Subcatchment 1.1: 1.1

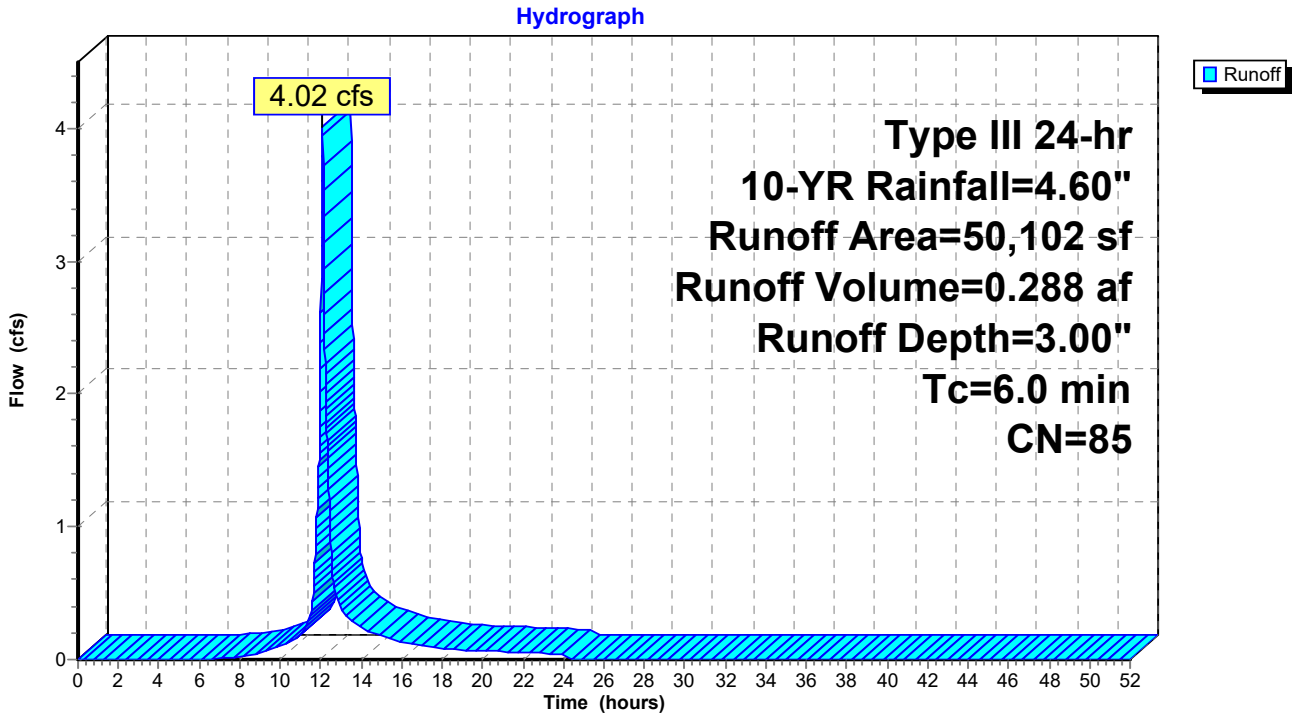
Runoff = 4.02 cfs @ 12.09 hrs, Volume= 0.288 af, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
10,913	39	>75% Grass cover, Good, HSG A
39,189	98	Paved parking, HSG D
50,102	85	Weighted Average
10,913		21.78% Pervious Area
39,189		78.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 1.1: 1.1



Summary for Subcatchment 1.2: 1.2

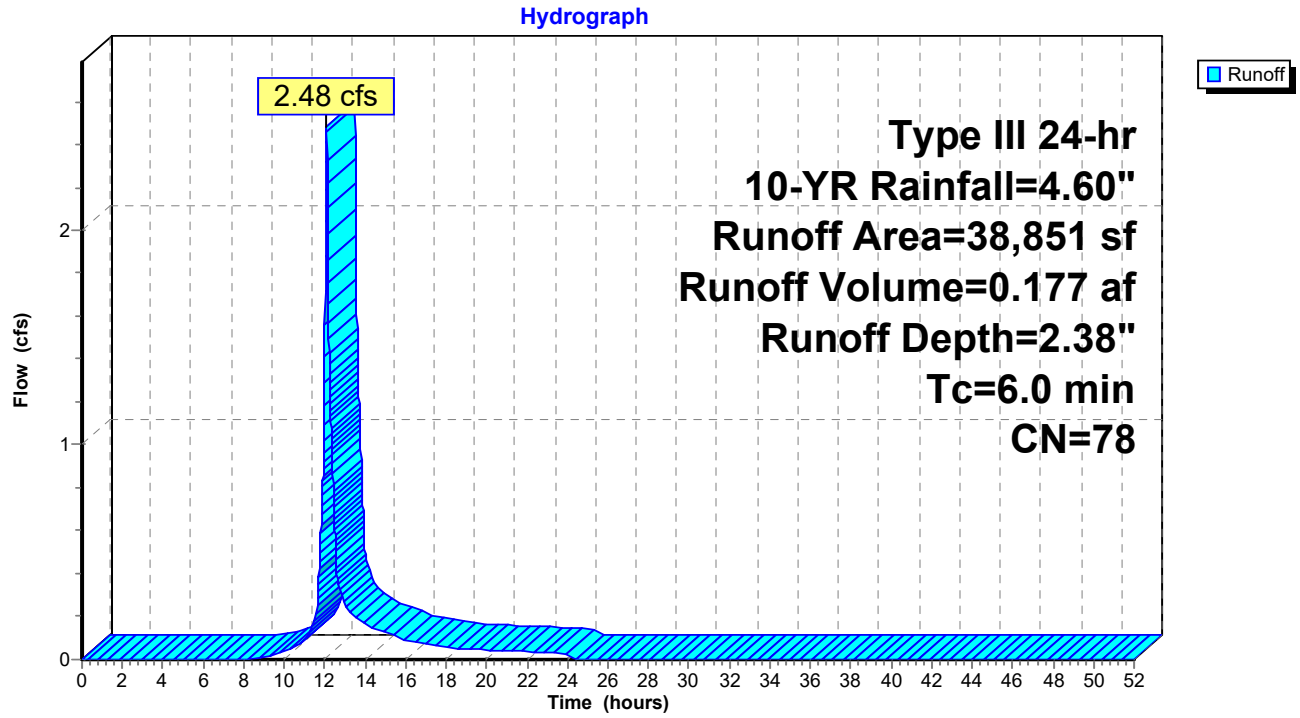
Runoff = 2.48 cfs @ 12.09 hrs, Volume= 0.177 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
25,381	98	Paved parking, HSG A
13,470	39	>75% Grass cover, Good, HSG A
38,851	78	Weighted Average
13,470		34.67% Pervious Area
25,381		65.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 1.2: 1.2



Summary for Subcatchment 1.3: 1.3

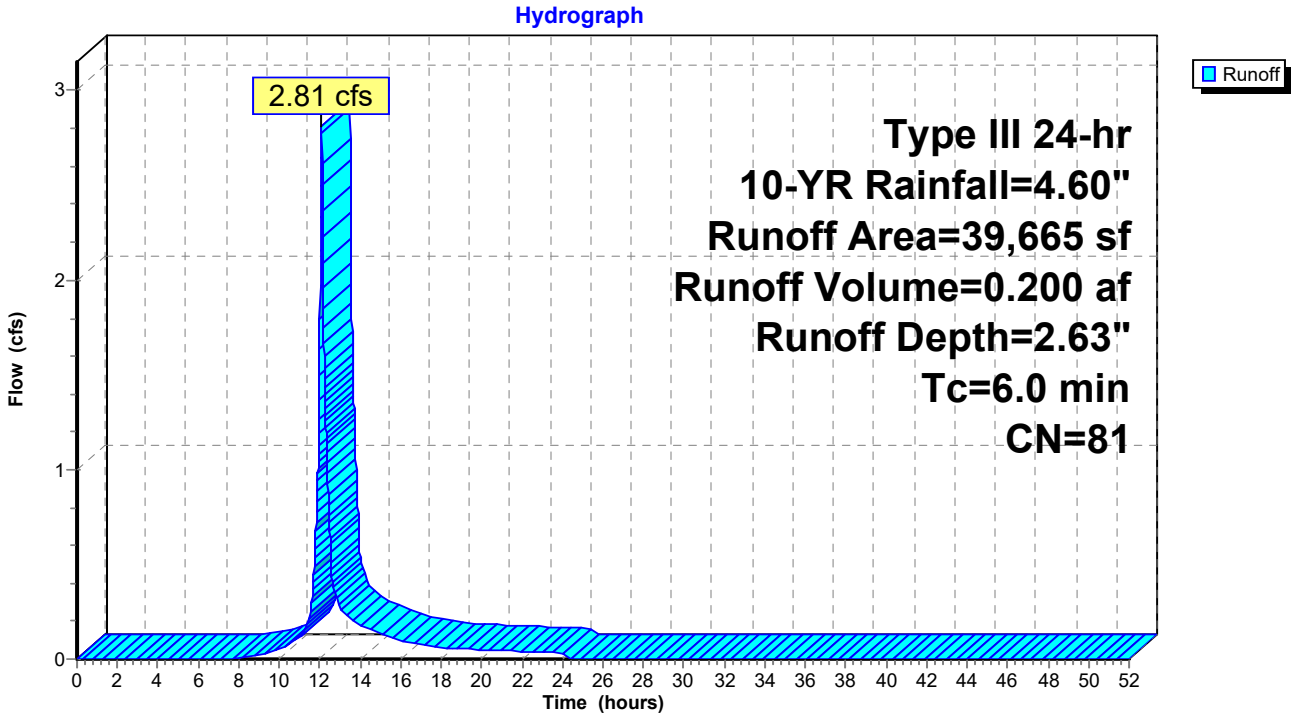
Runoff = 2.81 cfs @ 12.09 hrs, Volume= 0.200 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
22,776	80	>75% Grass cover, Good, HSG D
13,499	77	Woods, Good, HSG D
3,390	98	Paved parking, HSG A
39,665	81	Weighted Average
36,275		91.45% Pervious Area
3,390		8.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 1.3: 1.3



Summary for Subcatchment 2: 2

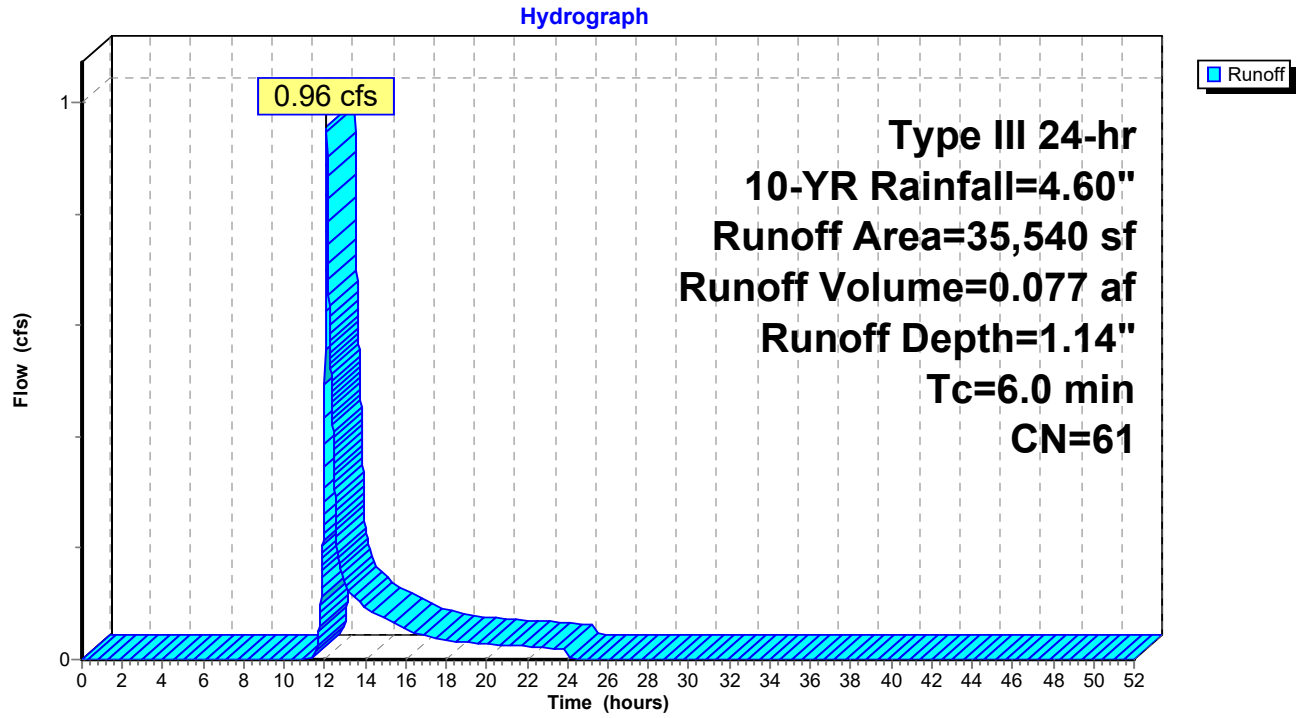
Runoff = 0.96 cfs @ 12.10 hrs, Volume= 0.077 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
14,981	98	Water Surface, 0% imp, HSG A
7,560	39	>75% Grass cover, Good, HSG A
12,999	30	Woods, Good, HSG A
35,540	61	Weighted Average
35,540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 2: 2



Summary for Subcatchment 3: 3

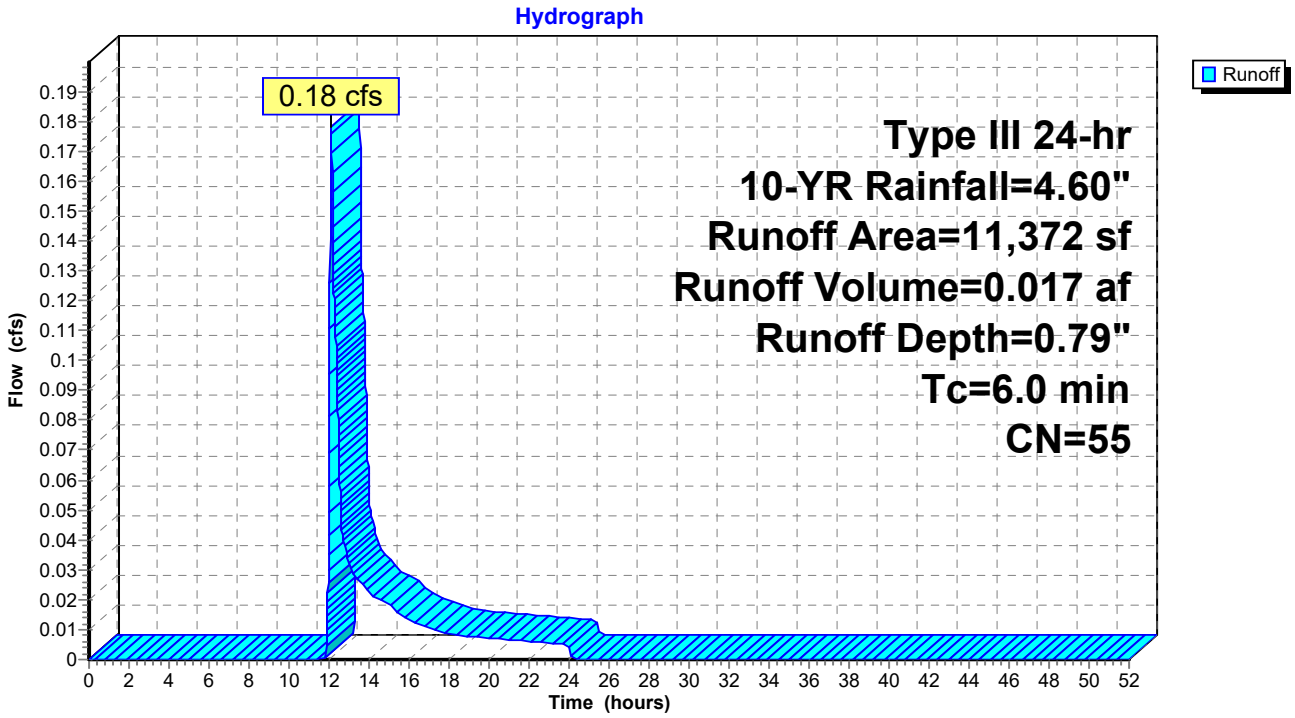
Runoff = 0.18 cfs @ 12.11 hrs, Volume= 0.017 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
3,712	98	Water Surface, 0% imp, HSG A
3,943	39	>75% Grass cover, Good, HSG A
3,717	30	Woods, Good, HSG A
11,372	55	Weighted Average
11,372		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 3: 3

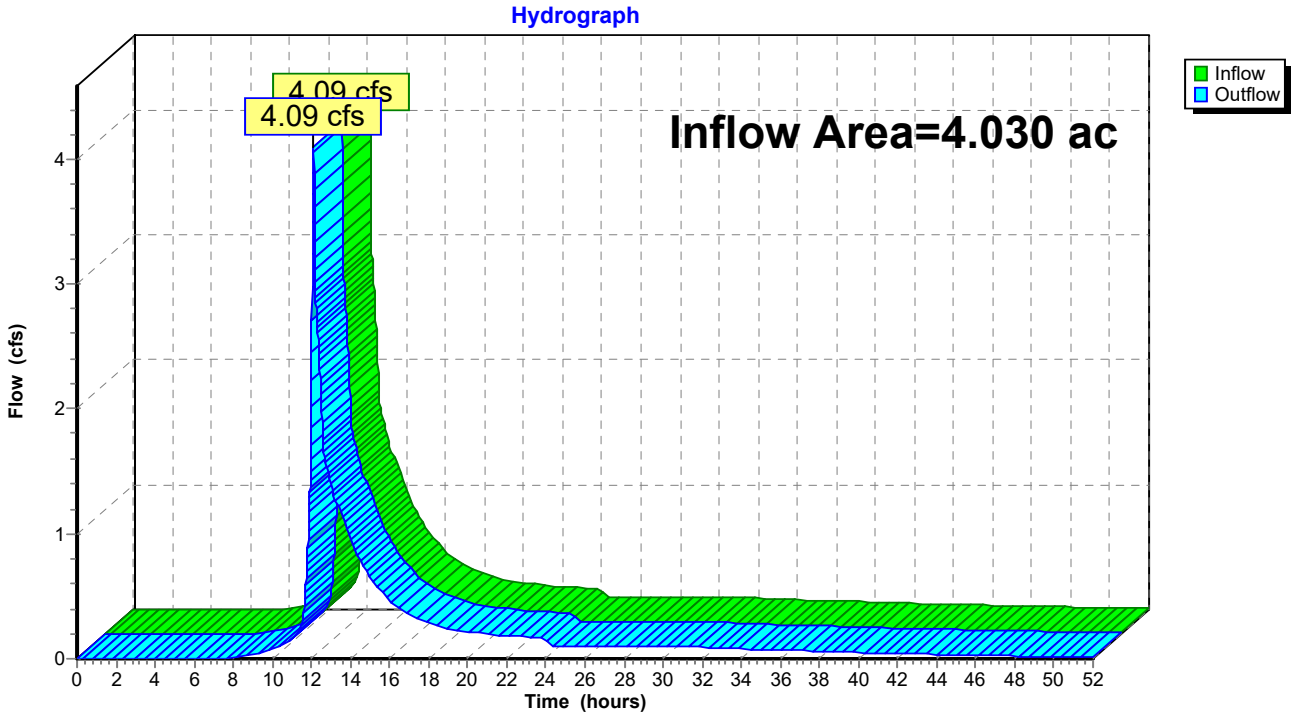


Summary for Reach POA: Total Runoff

Inflow Area = 4.030 ac, 38.72% Impervious, Inflow Depth > 2.24" for 10-YR event
Inflow = 4.09 cfs @ 12.10 hrs, Volume= 0.752 af
Outflow = 4.09 cfs @ 12.10 hrs, Volume= 0.752 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs

Reach POA: Total Runoff

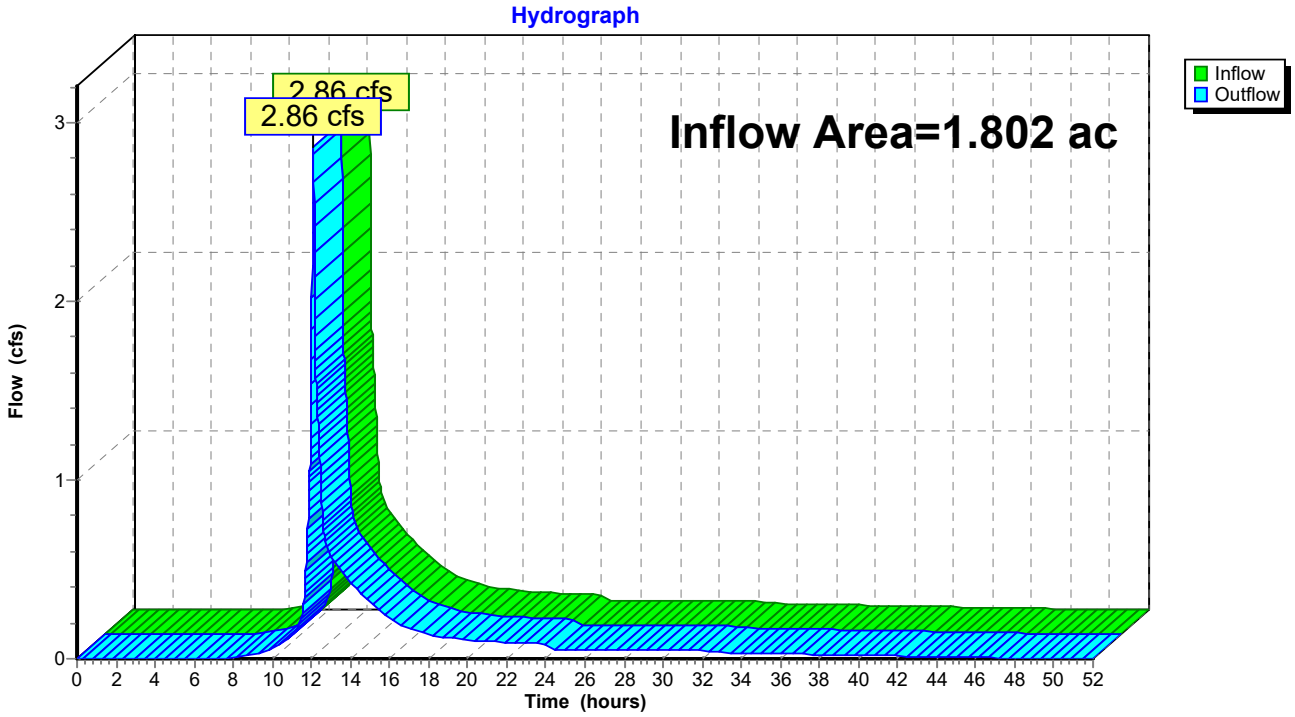


Summary for Reach R1: POI 1

Inflow Area = 1.802 ac, 36.64% Impervious, Inflow Depth > 2.51" for 10-YR event
Inflow = 2.86 cfs @ 12.09 hrs, Volume= 0.376 af
Outflow = 2.86 cfs @ 12.09 hrs, Volume= 0.376 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs

Reach R1: POI 1

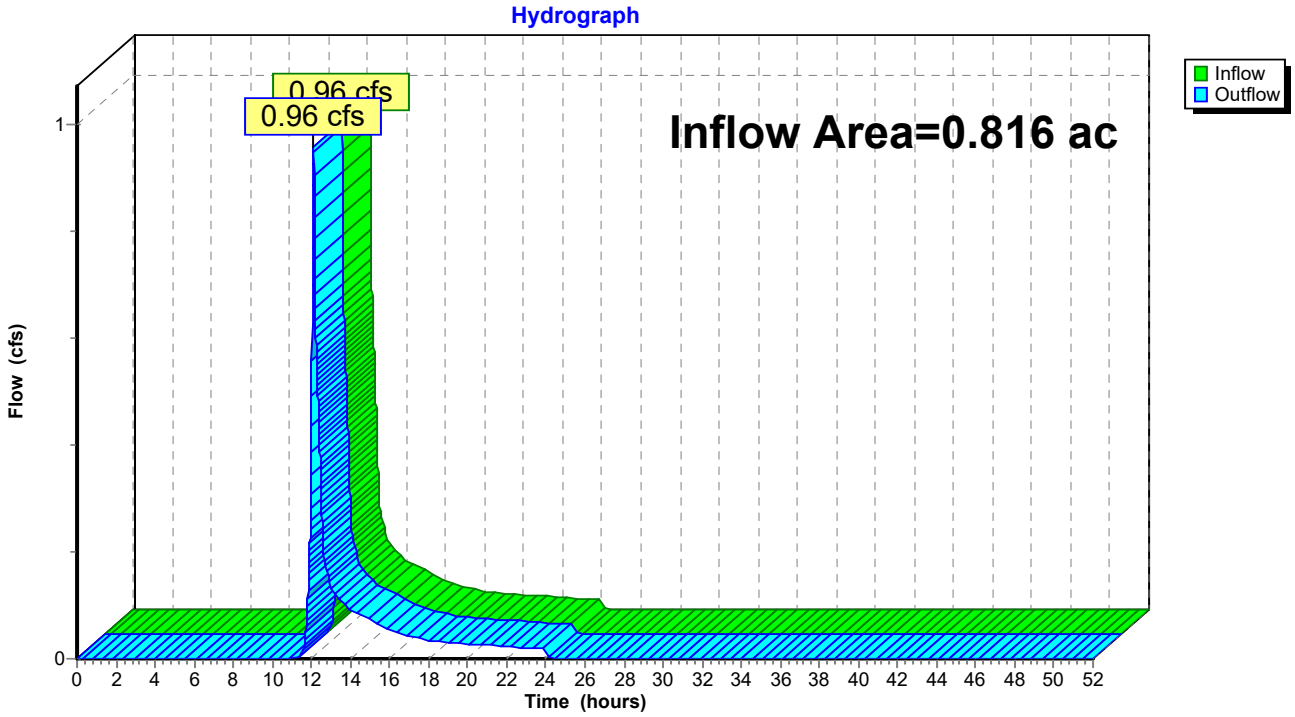


Summary for Reach R2: POI 2

Inflow Area = 0.816 ac, 0.00% Impervious, Inflow Depth = 1.14" for 10-YR event
Inflow = 0.96 cfs @ 12.10 hrs, Volume= 0.077 af
Outflow = 0.96 cfs @ 12.10 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs

Reach R2: POI 2

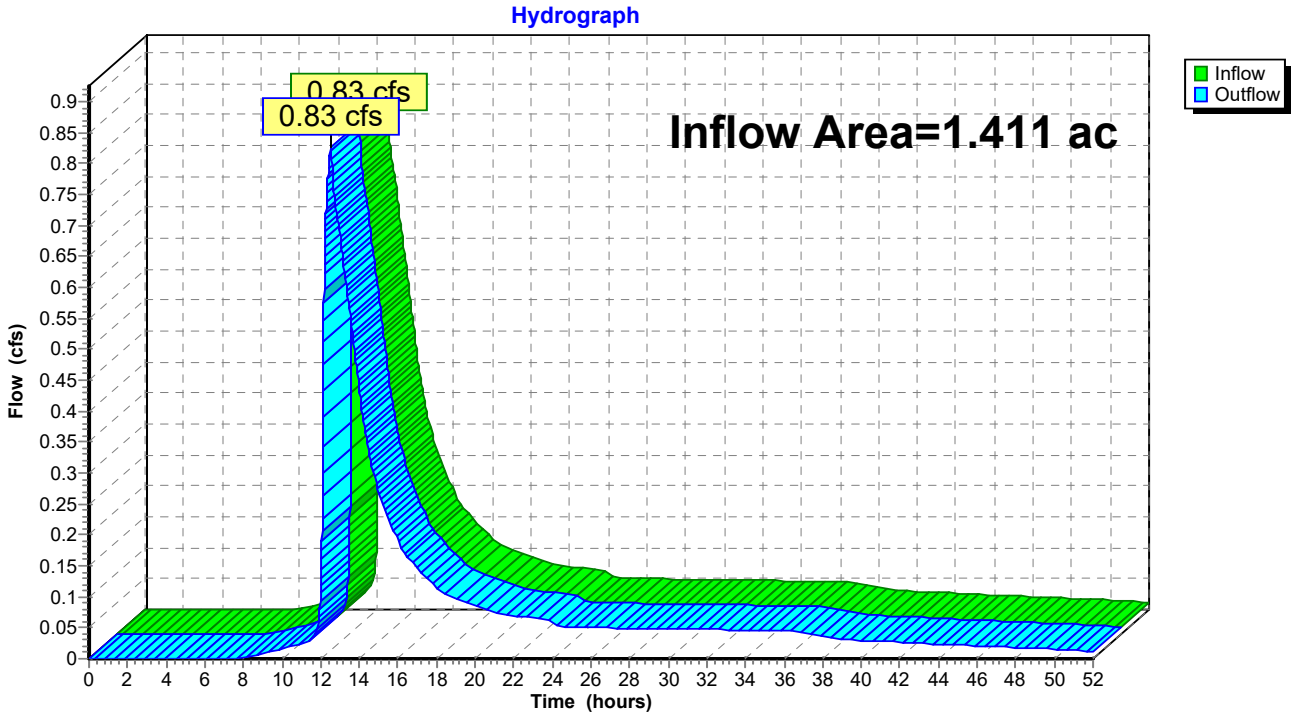


Summary for Reach R3: POI 3

Inflow Area = 1.411 ac, 63.75% Impervious, Inflow Depth > 2.54" for 10-YR event
Inflow = 0.83 cfs @ 12.52 hrs, Volume= 0.299 af
Outflow = 0.83 cfs @ 12.52 hrs, Volume= 0.299 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs

Reach R3: POI 3



Summary for Pond 1-1: VUSF 1

Inflow Area = 1.150 ac, 78.22% Impervious, Inflow Depth = 3.00" for 10-YR event
Inflow = 4.02 cfs @ 12.09 hrs, Volume= 0.288 af
Outflow = 0.76 cfs @ 12.54 hrs, Volume= 0.281 af, Atten= 81%, Lag= 27.0 min
Primary = 0.76 cfs @ 12.54 hrs, Volume= 0.281 af

Routing by Stor-Ind method, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Peak Elev= 75.85' @ 12.54 hrs Surf.Area= 7,965 sf Storage= 6,094 cf

Plug-Flow detention time= 450.9 min calculated for 0.281 af (98% of inflow)
Center-of-Mass det. time= 438.3 min (1,249.1 - 810.8)

Volume	Invert	Avail.Storage	Storage Description
#1	74.30'	14,007 cf	**Storage (Prismatic)** Listed below (Recalc)
#2	72.80'	327 cf	**Soil Filter (Prismatic)** Listed below (Recalc) 3,267 cf Overall x 10.0% Voids
#3	71.30'	1,307 cf	**Stone & Gravel Layer (Prismatic)** Listed below (Recalc) 3,267 cf Overall x 40.0% Voids
		15,641 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.30	2,178	0	0
75.00	2,809	1,745	1,745
76.00	3,755	3,282	5,027
77.00	4,964	4,360	9,387
77.85	5,907	4,620	14,007

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
72.80	2,178	0	0
74.30	2,178	3,267	3,267

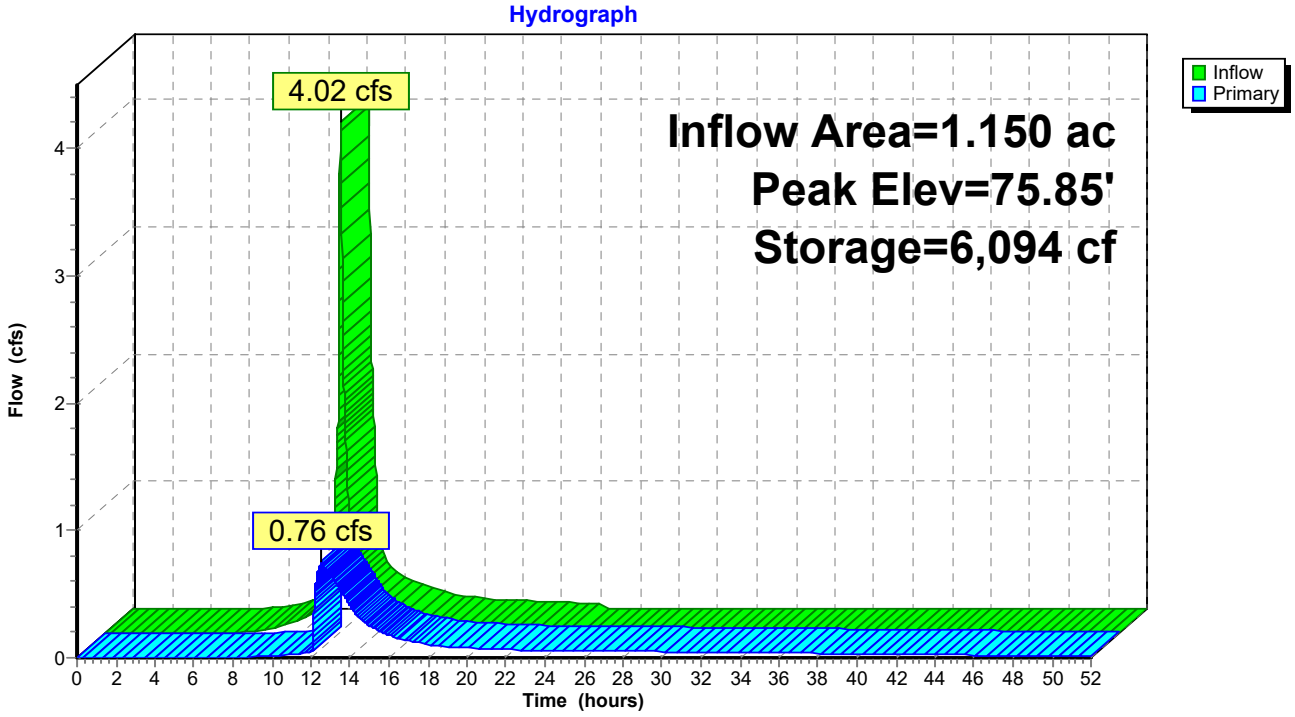
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
71.30	2,178	0	0
72.80	2,178	3,267	3,267

Device	Routing	Invert	Outlet Devices
#1	Primary	71.30'	**12.0" Round Culvert** L= 126.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.30' / 70.50' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	71.35'	**1.0" Vert. WQ Orifice** C= 0.600
#3	Device 1	75.10'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	75.83'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#5	Device 1	77.00'	**8.0" Vert. Beehive OCS RIM** C= 0.600
#6	Primary	77.35'	**10.0' long x 7.0' breadth Emergency Spillway**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=0.74 cfs @ 12.54 hrs HW=75.85' (Free Discharge)
- **1=Culvert** (Passes 0.74 cfs of 5.43 cfs potential flow)
  - **2=WQ Orifice** (Orifice Controls 0.06 cfs @ 10.16 fps)
  - **3=Orifice/Grate** (Orifice Controls 0.67 cfs @ 3.39 fps)
  - **4=Broad-Crested Rectangular Weir** (Weir Controls 0.02 cfs @ 0.36 fps)
  - **5=Beehive OCS RIM** (Controls 0.00 cfs)
- **6=Emergency Spillway** (Controls 0.00 cfs)

Pond 1-1: VUSF 1



Summary for Pond 1-2: VUSF 2

Inflow Area = 0.892 ac, 65.33% Impervious, Inflow Depth = 2.38" for 10-YR event
Inflow = 2.48 cfs @ 12.09 hrs, Volume= 0.177 af
Outflow = 0.30 cfs @ 12.83 hrs, Volume= 0.176 af, Atten= 88%, Lag= 44.4 min
Primary = 0.30 cfs @ 12.83 hrs, Volume= 0.176 af

Routing by Stor-Ind method, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Peak Elev= 75.85' @ 12.83 hrs Surf.Area= 5,366 sf Storage= 3,735 cf

Plug-Flow detention time= 447.9 min calculated for 0.176 af (100% of inflow)
Center-of-Mass det. time= 447.5 min (1,278.4 - 830.9)

Volume	Invert	Avail.Storage	Storage Description
#1	74.50'	8,741 cf	**Storage (Prismatic)** Listed below (Recalc)
#2	73.00'	232 cf	**Soil Filter (Prismatic)** Listed below (Recalc) 2,319 cf Overall x 10.0% Voids
#3	71.50'	928 cf	**Stone & Gravel Layer (Prismatic)** Listed below (Recalc) 2,319 cf Overall x 40.0% Voids
		9,900 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.50	1,546	0	0
75.00	1,803	837	837
76.00	2,356	2,080	2,917
77.00	3,124	2,740	5,657
77.90	3,729	3,084	8,741

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	1,546	0	0
74.50	1,546	2,319	2,319

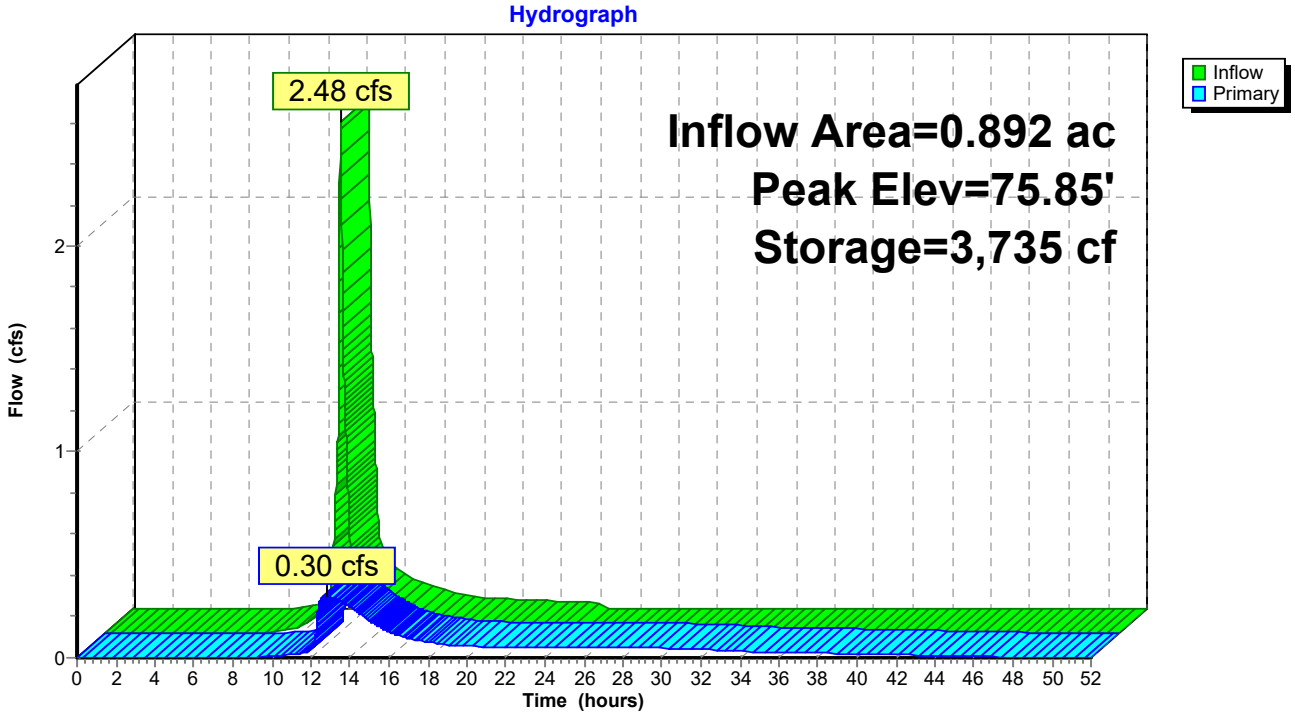
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
71.50	1,546	0	0
73.00	1,546	2,319	2,319

Device	Routing	Invert	Outlet Devices
#1	Primary	71.45'	**12.0" Round Culvert** L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.45' / 68.72' S= 0.0910 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	71.50'	**1.0" Vert. WQ Orifice** C= 0.600
#3	Device 1	75.35'	**4.0" Vert. Quantity Orifice** C= 0.600
#4	Device 1	75.85'	**4.0' long x 0.6' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 Coef. (English) 2.78 2.87 3.00 3.20 3.25 3.27 3.30 3.31 3.32
#5	Device 1	77.15'	**8.0" Vert. Beehive OCS RIM** C= 0.600
#6	Primary	77.40'	**10.0' long x 7.0' breadth Emergency Spillway**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=0.30 cfs @ 12.83 hrs HW=75.85' (Free Discharge)
- **1=Culvert** (Passes 0.30 cfs of 5.90 cfs potential flow)
  - **2=WQ Orifice** (Orifice Controls 0.05 cfs @ 10.00 fps)
  - **3=Quantity Orifice** (Orifice Controls 0.24 cfs @ 2.79 fps)
  - **4=Broad-Crested Rectangular Weir** (Weir Controls 0.00 cfs @ 0.14 fps)
  - **5=Beehive OCS RIM** (Controls 0.00 cfs)
- **6=Emergency Spillway** (Controls 0.00 cfs)

Pond 1-2: VUSF 2



Time span=0.00-52.00 hrs, dt=0.01 hrs, 5201 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 1.1: 1.1 Runoff Area=50,102 sf 78.22% Impervious Runoff Depth=4.11"
Tc=6.0 min CN=85 Runoff=5.45 cfs 0.394 af

Subcatchment 1.2: 1.2 Runoff Area=38,851 sf 65.33% Impervious Runoff Depth=3.40"
Tc=6.0 min CN=78 Runoff=3.56 cfs 0.253 af

Subcatchment 1.3: 1.3 Runoff Area=39,665 sf 8.55% Impervious Runoff Depth=3.70"
Tc=6.0 min CN=81 Runoff=3.93 cfs 0.281 af

Subcatchment 2: 2 Runoff Area=35,540 sf 0.00% Impervious Runoff Depth=1.87"
Tc=6.0 min CN=61 Runoff=1.70 cfs 0.127 af

Subcatchment 3: 3 Runoff Area=11,372 sf 0.00% Impervious Runoff Depth=1.40"
Tc=6.0 min CN=55 Runoff=0.38 cfs 0.031 af

Reach POA: Total Runoff Inflow=6.96 cfs 1.079 af
Outflow=6.96 cfs 1.079 af

Reach R1: POI 1 Inflow=4.10 cfs 0.534 af
Outflow=4.10 cfs 0.534 af

Reach R2: POI 2 Inflow=1.70 cfs 0.127 af
Outflow=1.70 cfs 0.127 af

Reach R3: POI 3 Inflow=2.63 cfs 0.418 af
Outflow=2.63 cfs 0.418 af

Pond 1-1: VUSF 1 Peak Elev=76.09' Storage=7,018 cf Inflow=5.45 cfs 0.394 af
Outflow=2.42 cfs 0.388 af

Pond 1-2: VUSF 2 Peak Elev=76.07' Storage=4,245 cf Inflow=3.56 cfs 0.253 af
Outflow=1.54 cfs 0.253 af

Total Runoff Area = 4.030 ac Runoff Volume = 1.086 af Average Runoff Depth = 3.23"
61.28% Pervious = 2.469 ac 38.72% Impervious = 1.560 ac

Summary for Subcatchment 1.1: 1.1

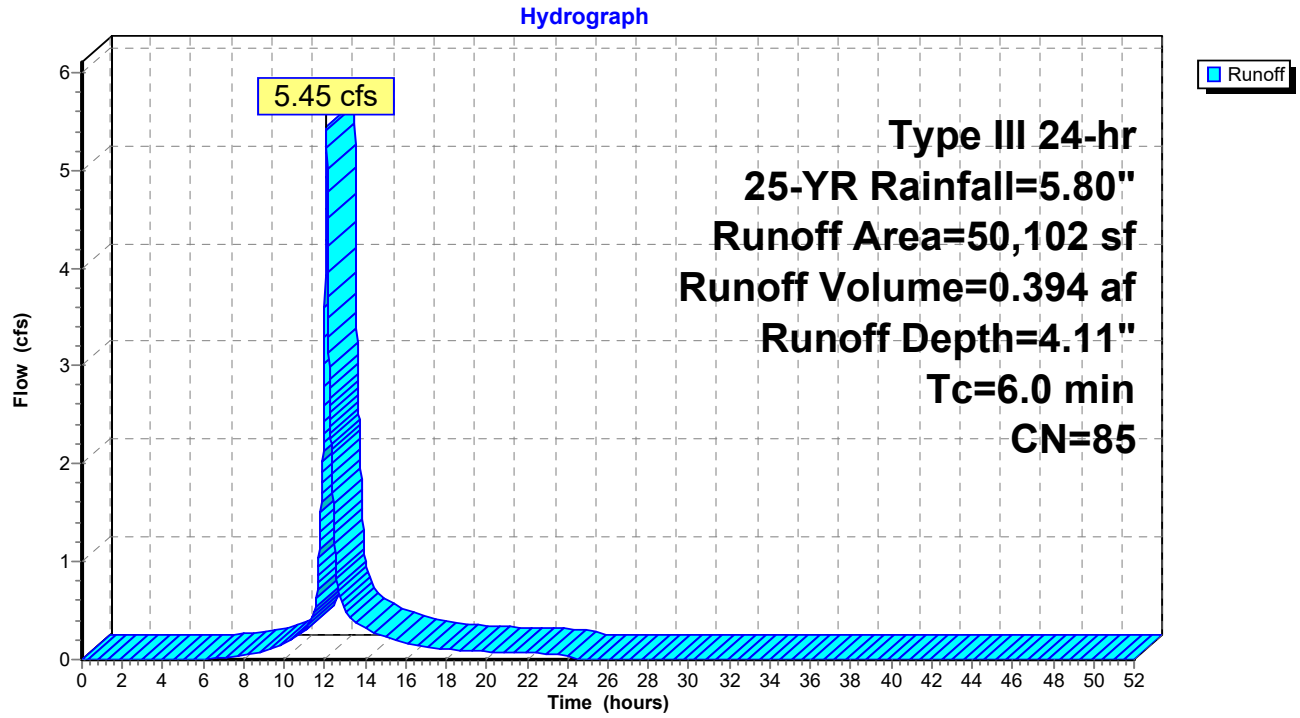
Runoff = 5.45 cfs @ 12.09 hrs, Volume= 0.394 af, Depth= 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
10,913	39	>75% Grass cover, Good, HSG A
39,189	98	Paved parking, HSG D
50,102	85	Weighted Average
10,913		21.78% Pervious Area
39,189		78.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 1.1: 1.1



Summary for Subcatchment 1.2: 1.2

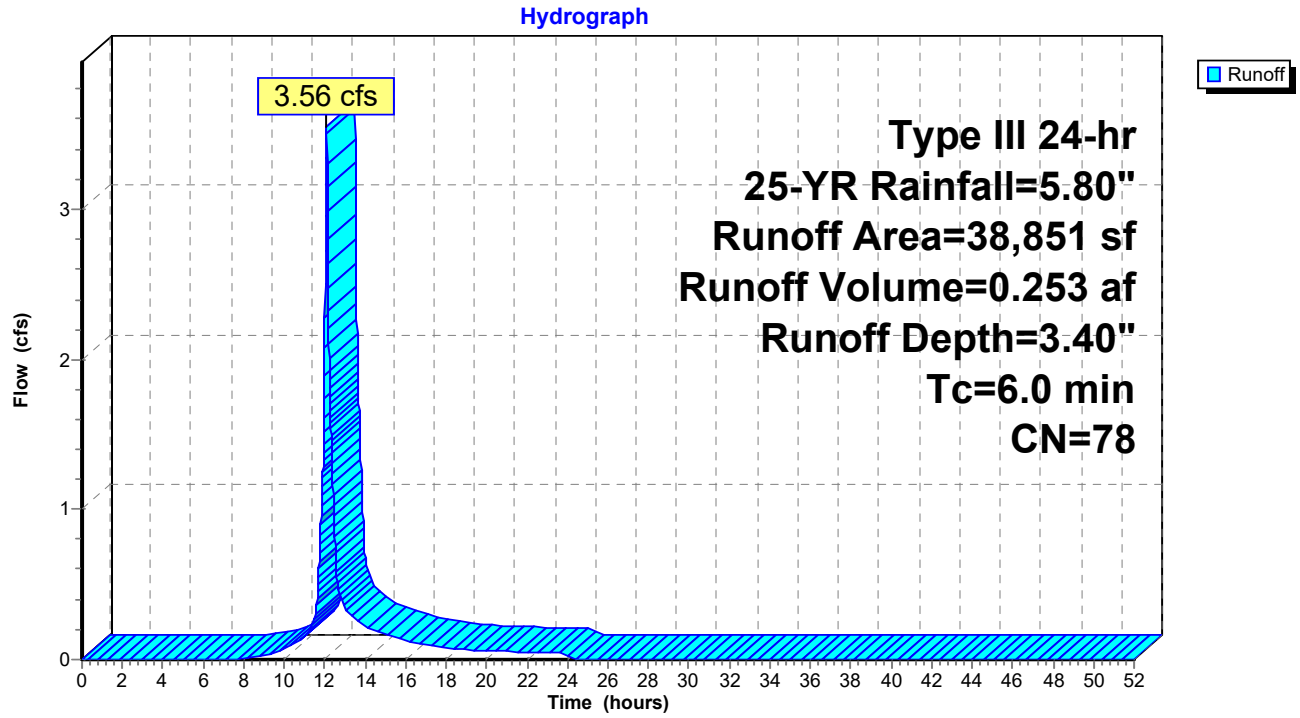
Runoff = 3.56 cfs @ 12.09 hrs, Volume= 0.253 af, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
25,381	98	Paved parking, HSG A
13,470	39	>75% Grass cover, Good, HSG A
38,851	78	Weighted Average
13,470		34.67% Pervious Area
25,381		65.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 1.2: 1.2



Summary for Subcatchment 1.3: 1.3

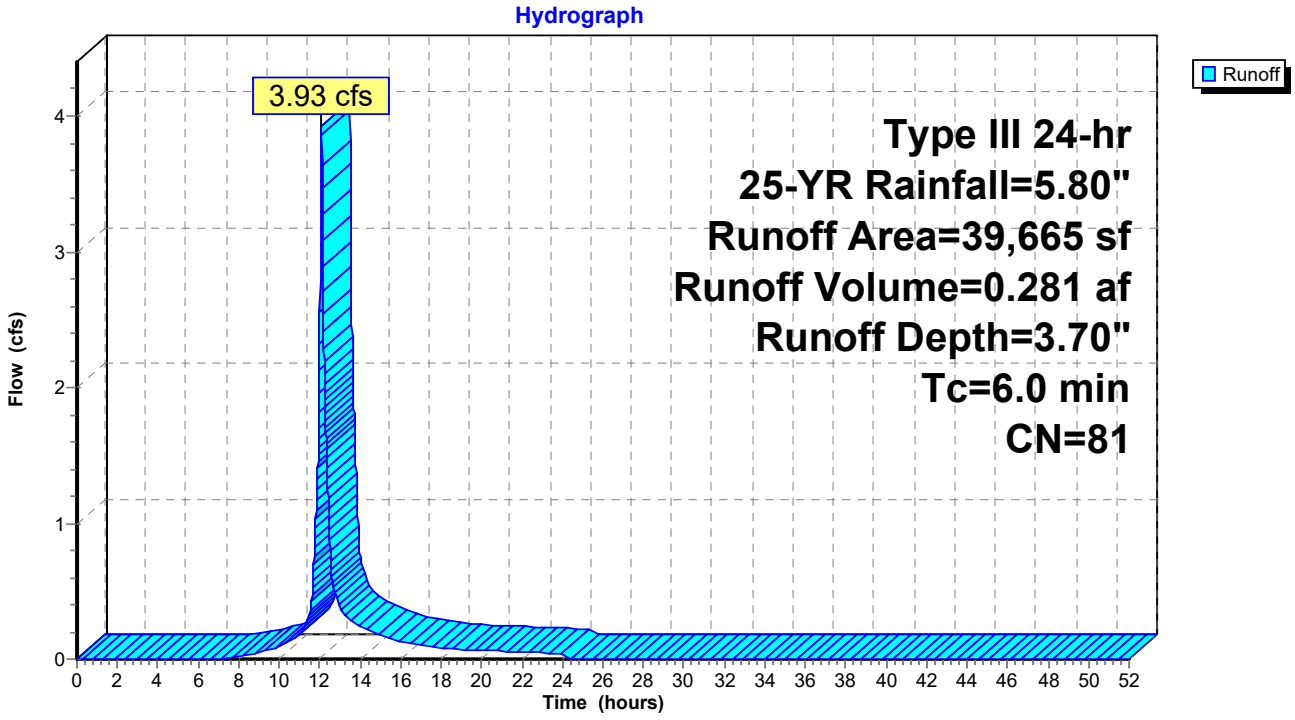
Runoff = 3.93 cfs @ 12.09 hrs, Volume= 0.281 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
22,776	80	>75% Grass cover, Good, HSG D
13,499	77	Woods, Good, HSG D
3,390	98	Paved parking, HSG A
39,665	81	Weighted Average
36,275		91.45% Pervious Area
3,390		8.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 1.3: 1.3



Summary for Subcatchment 2: 2

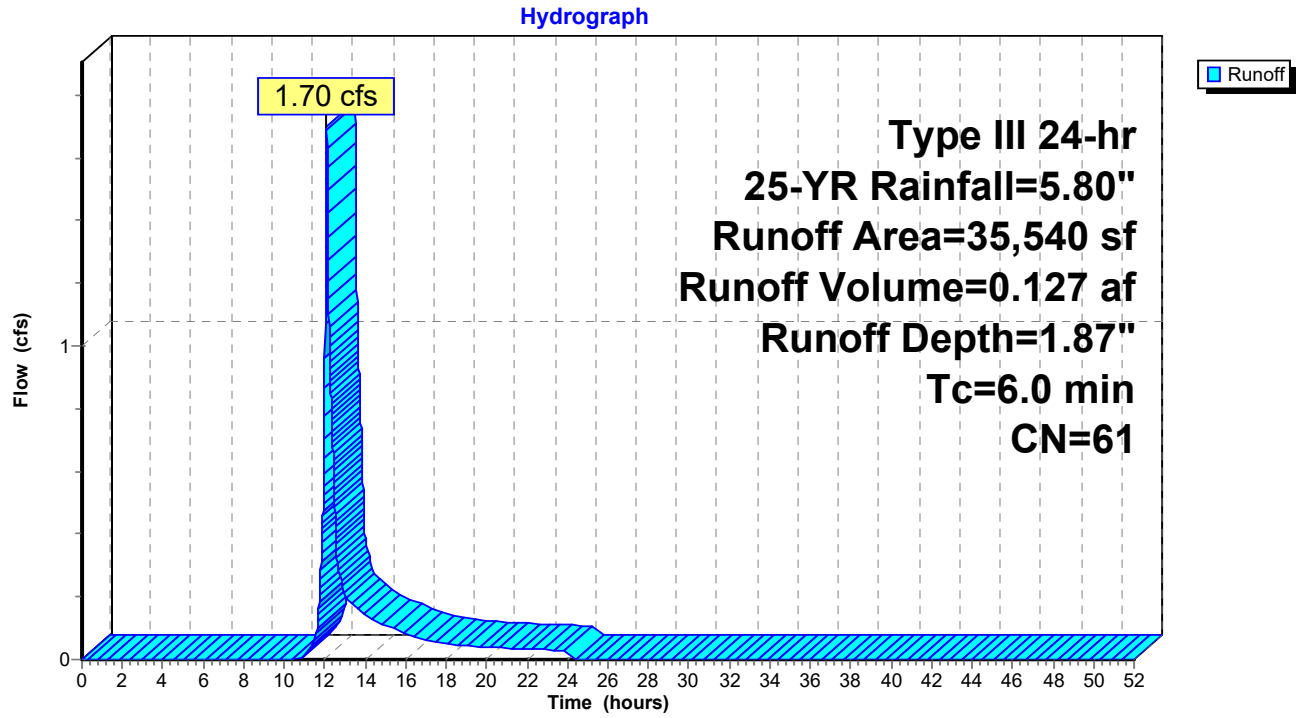
Runoff = 1.70 cfs @ 12.10 hrs, Volume= 0.127 af, Depth= 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
14,981	98	Water Surface, 0% imp, HSG A
7,560	39	>75% Grass cover, Good, HSG A
12,999	30	Woods, Good, HSG A
35,540	61	Weighted Average
35,540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 2: 2



Summary for Subcatchment 3: 3

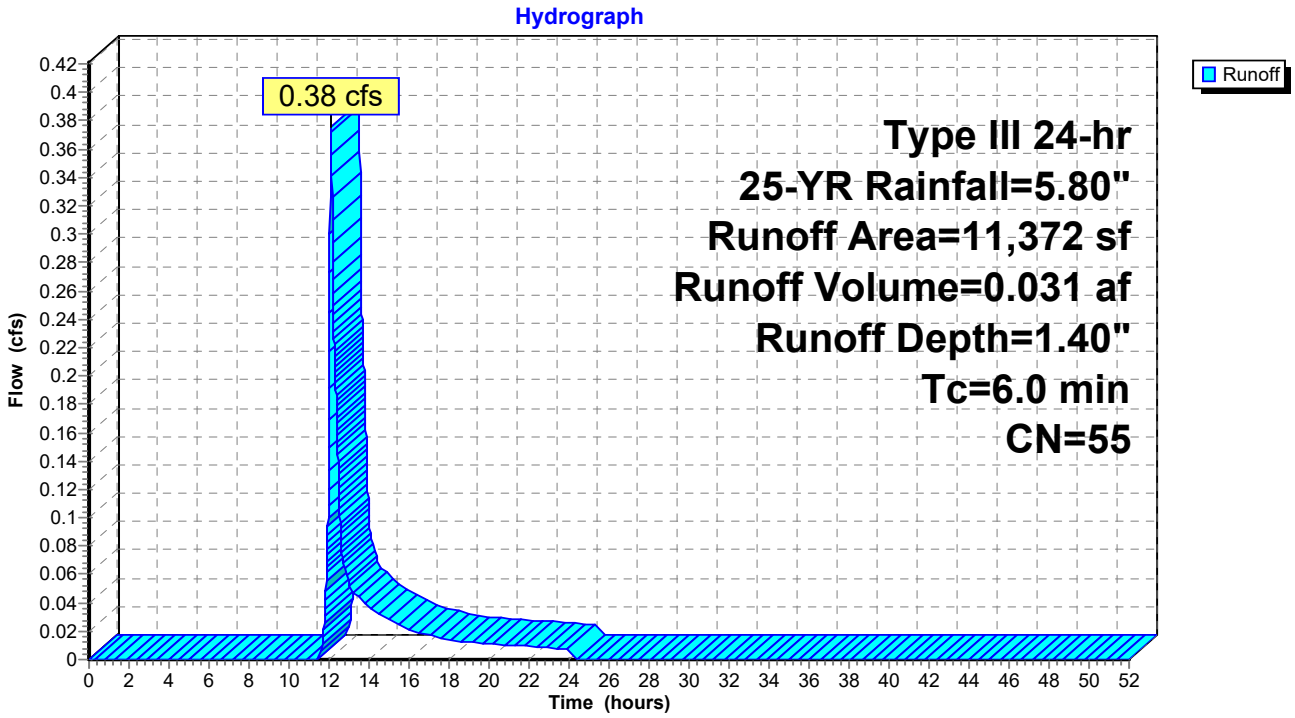
Runoff = 0.38 cfs @ 12.10 hrs, Volume= 0.031 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
3,712	98	Water Surface, 0% imp, HSG A
3,943	39	>75% Grass cover, Good, HSG A
3,717	30	Woods, Good, HSG A
11,372	55	Weighted Average
11,372		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Subcatchment 3: 3

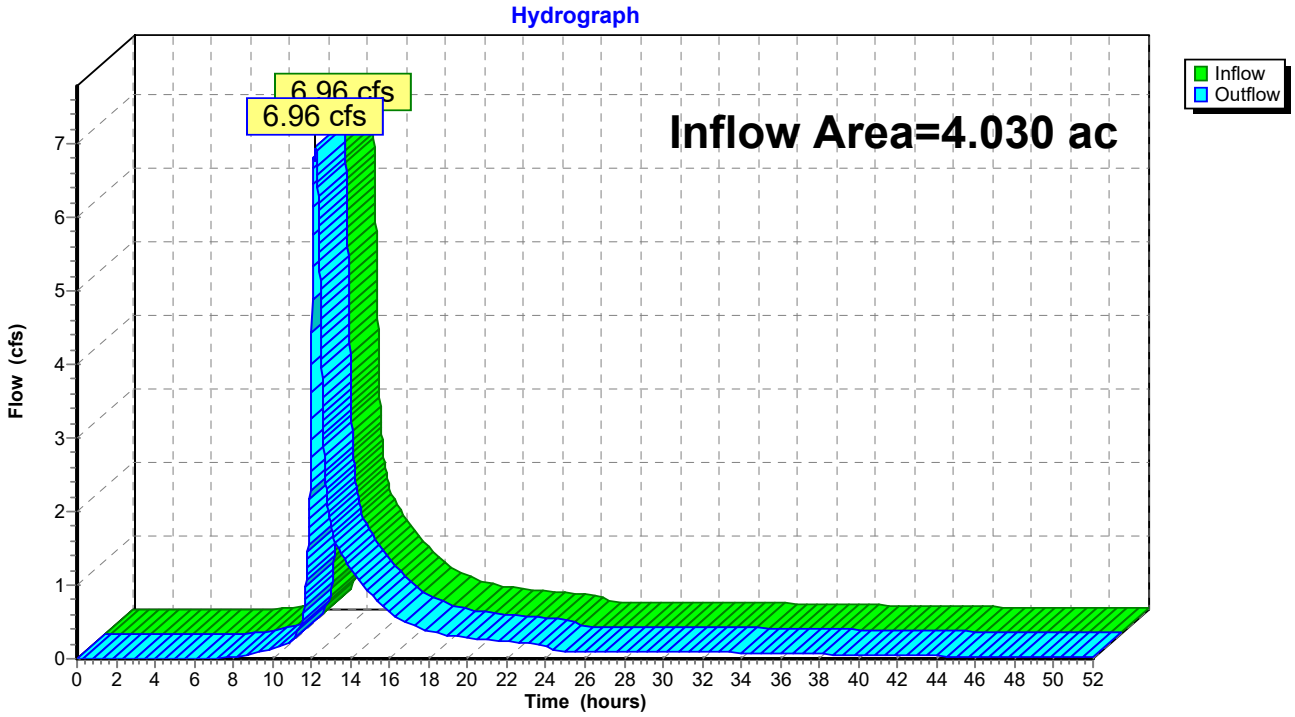


Summary for Reach POA: Total Runoff

Inflow Area = 4.030 ac, 38.72% Impervious, Inflow Depth > 3.21" for 25-YR event
Inflow = 6.96 cfs @ 12.23 hrs, Volume= 1.079 af
Outflow = 6.96 cfs @ 12.23 hrs, Volume= 1.079 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs

Reach POA: Total Runoff

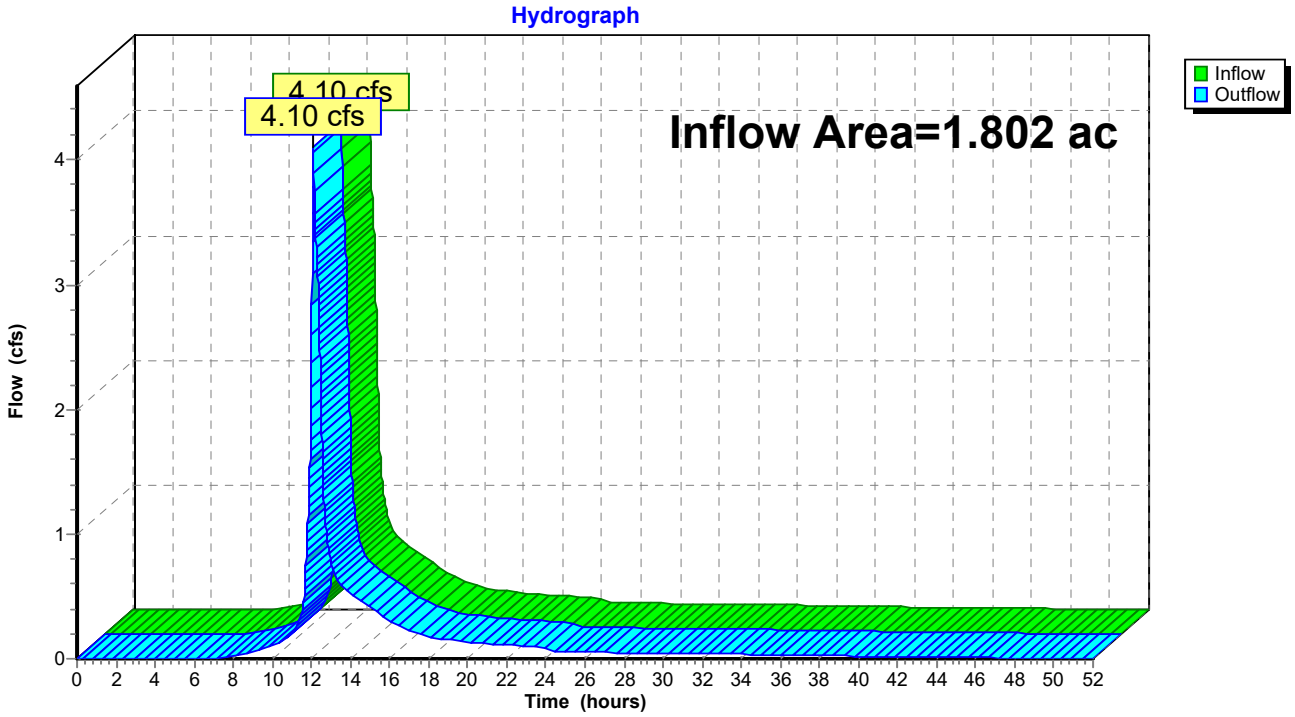


Summary for Reach R1: POI 1

Inflow Area = 1.802 ac, 36.64% Impervious, Inflow Depth > 3.55" for 25-YR event
Inflow = 4.10 cfs @ 12.09 hrs, Volume= 0.534 af
Outflow = 4.10 cfs @ 12.09 hrs, Volume= 0.534 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs

Reach R1: POI 1

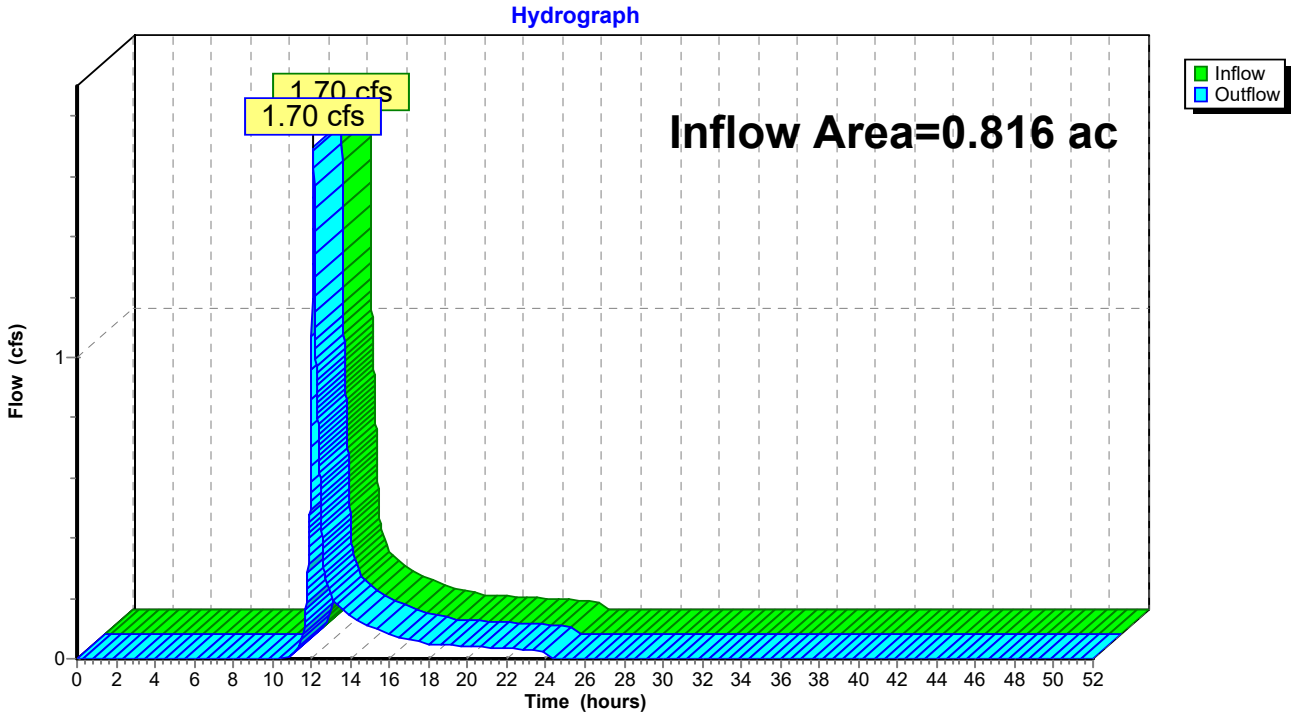


Summary for Reach R2: POI 2

Inflow Area = 0.816 ac, 0.00% Impervious, Inflow Depth = 1.87" for 25-YR event
Inflow = 1.70 cfs @ 12.10 hrs, Volume= 0.127 af
Outflow = 1.70 cfs @ 12.10 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs

Reach R2: POI 2

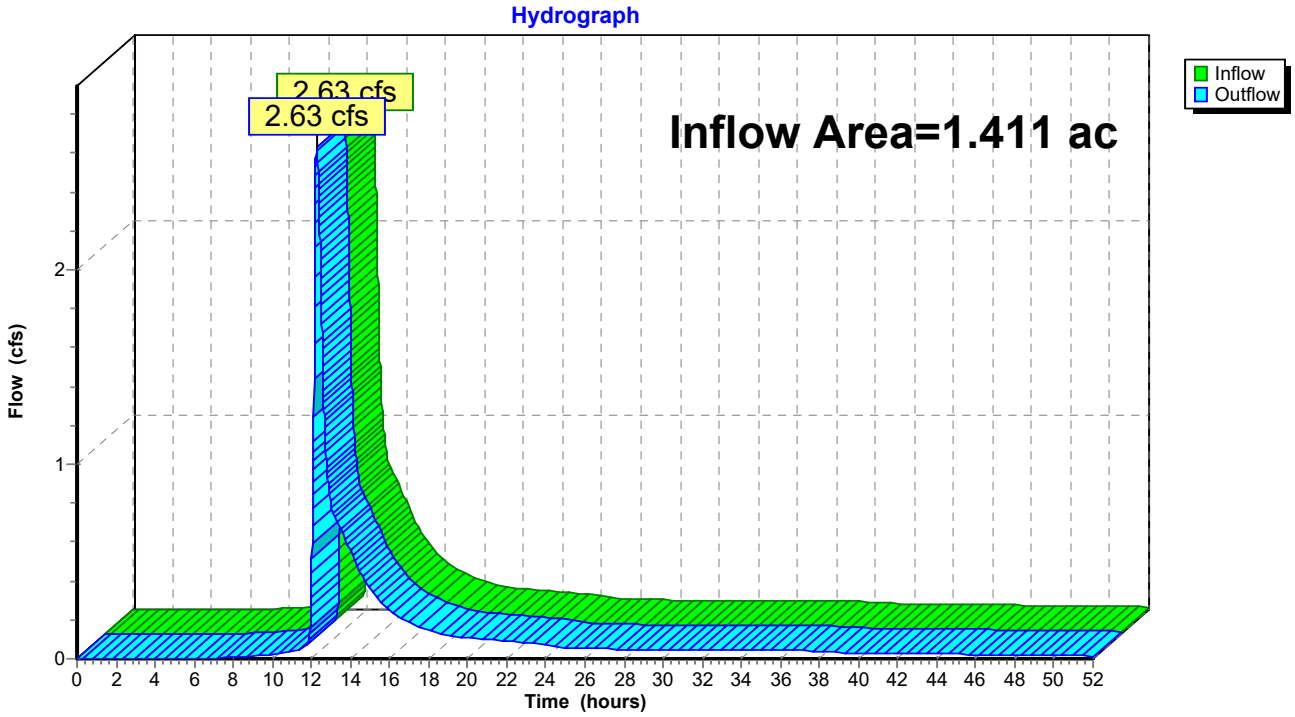


Summary for Reach R3: POI 3

Inflow Area = 1.411 ac, 63.75% Impervious, Inflow Depth > 3.56" for 25-YR event
Inflow = 2.63 cfs @ 12.27 hrs, Volume= 0.418 af
Outflow = 2.63 cfs @ 12.27 hrs, Volume= 0.418 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs

Reach R3: POI 3



Summary for Pond 1-1: VUSF 1

Inflow Area = 1.150 ac, 78.22% Impervious, Inflow Depth = 4.11" for 25-YR event
Inflow = 5.45 cfs @ 12.09 hrs, Volume= 0.394 af
Outflow = 2.42 cfs @ 12.27 hrs, Volume= 0.388 af, Atten= 56%, Lag= 11.3 min
Primary = 2.42 cfs @ 12.27 hrs, Volume= 0.388 af

Routing by Stor-Ind method, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Peak Elev= 76.09' @ 12.27 hrs Surf.Area= 8,224 sf Storage= 7,018 cf

Plug-Flow detention time= 346.5 min calculated for 0.388 af (98% of inflow)
Center-of-Mass det. time= 336.4 min (1,138.3 - 801.9)

Volume	Invert	Avail.Storage	Storage Description
#1	74.30'	14,007 cf	**Storage (Prismatic)** Listed below (Recalc)
#2	72.80'	327 cf	**Soil Filter (Prismatic)** Listed below (Recalc) 3,267 cf Overall x 10.0% Voids
#3	71.30'	1,307 cf	**Stone & Gravel Layer (Prismatic)** Listed below (Recalc) 3,267 cf Overall x 40.0% Voids
		15,641 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.30	2,178	0	0
75.00	2,809	1,745	1,745
76.00	3,755	3,282	5,027
77.00	4,964	4,360	9,387
77.85	5,907	4,620	14,007

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
72.80	2,178	0	0
74.30	2,178	3,267	3,267

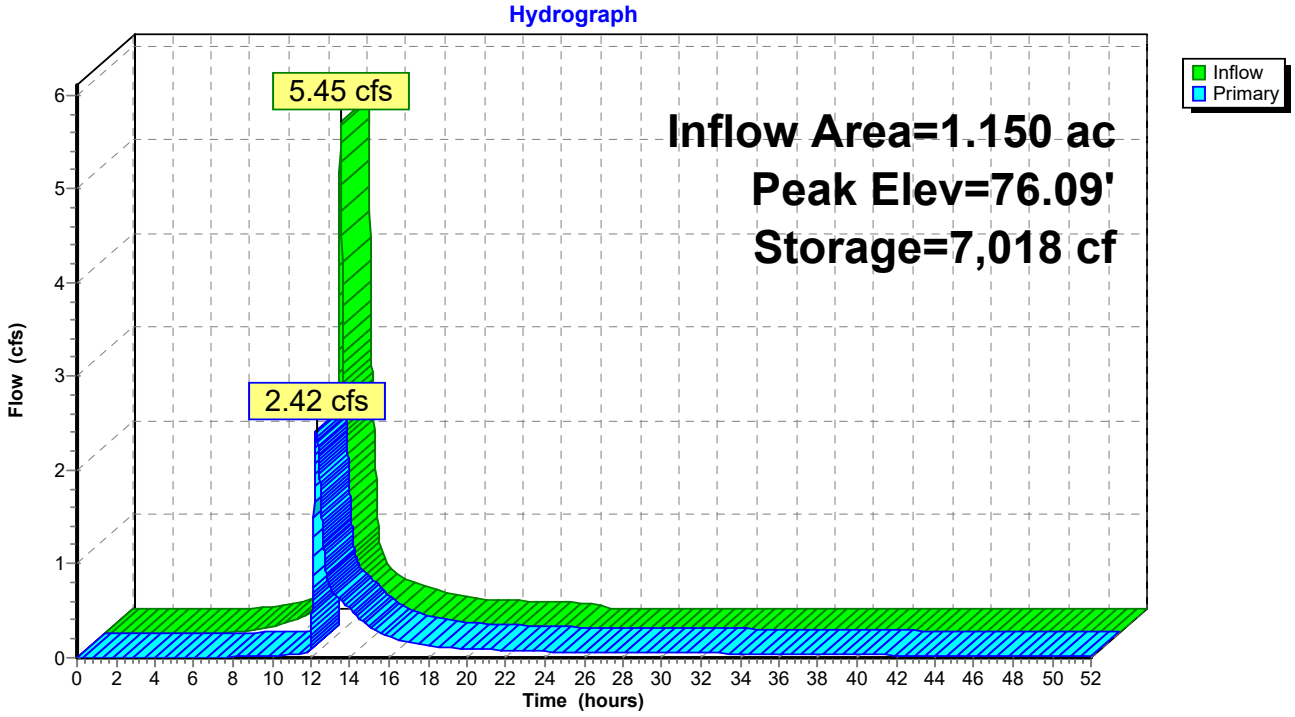
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
71.30	2,178	0	0
72.80	2,178	3,267	3,267

Device	Routing	Invert	Outlet Devices
#1	Primary	71.30'	**12.0" Round Culvert** L= 126.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.30' / 70.50' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	71.35'	**1.0" Vert. WQ Orifice** C= 0.600
#3	Device 1	75.10'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	75.83'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#5	Device 1	77.00'	**8.0" Vert. Beehive OCS RIM** C= 0.600
#6	Primary	77.35'	**10.0' long x 7.0' breadth Emergency Spillway**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=2.41 cfs @ 12.27 hrs HW=76.09' (Free Discharge)
- **1=Culvert** (Passes 2.41 cfs of 5.58 cfs potential flow)
  - **2=WQ Orifice** (Orifice Controls 0.06 cfs @ 10.44 fps)
  - **3=Orifice/Grate** (Orifice Controls 0.82 cfs @ 4.15 fps)
  - **4=Broad-Crested Rectangular Weir** (Weir Controls 1.54 cfs @ 1.46 fps)
  - **5=Beehive OCS RIM** (Controls 0.00 cfs)
- **6=Emergency Spillway** (Controls 0.00 cfs)

Pond 1-1: VUSF 1



Summary for Pond 1-2: VUSF 2

Inflow Area = 0.892 ac, 65.33% Impervious, Inflow Depth = 3.40" for 25-YR event
Inflow = 3.56 cfs @ 12.09 hrs, Volume= 0.253 af
Outflow = 1.54 cfs @ 12.30 hrs, Volume= 0.253 af, Atten= 57%, Lag= 12.8 min
Primary = 1.54 cfs @ 12.30 hrs, Volume= 0.253 af

Routing by Stor-Ind method, Time Span= 0.00-52.00 hrs, dt= 0.01 hrs
Peak Elev= 76.07' @ 12.30 hrs Surf.Area= 5,502 sf Storage= 4,245 cf

Plug-Flow detention time= 339.3 min calculated for 0.253 af (100% of inflow)
Center-of-Mass det. time= 338.9 min (1,159.5 - 820.6)

Volume	Invert	Avail.Storage	Storage Description
#1	74.50'	8,741 cf	**Storage (Prismatic)** Listed below (Recalc)
#2	73.00'	232 cf	**Soil Filter (Prismatic)** Listed below (Recalc) 2,319 cf Overall x 10.0% Voids
#3	71.50'	928 cf	**Stone & Gravel Layer (Prismatic)** Listed below (Recalc) 2,319 cf Overall x 40.0% Voids
		9,900 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.50	1,546	0	0
75.00	1,803	837	837
76.00	2,356	2,080	2,917
77.00	3,124	2,740	5,657
77.90	3,729	3,084	8,741

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
73.00	1,546	0	0
74.50	1,546	2,319	2,319

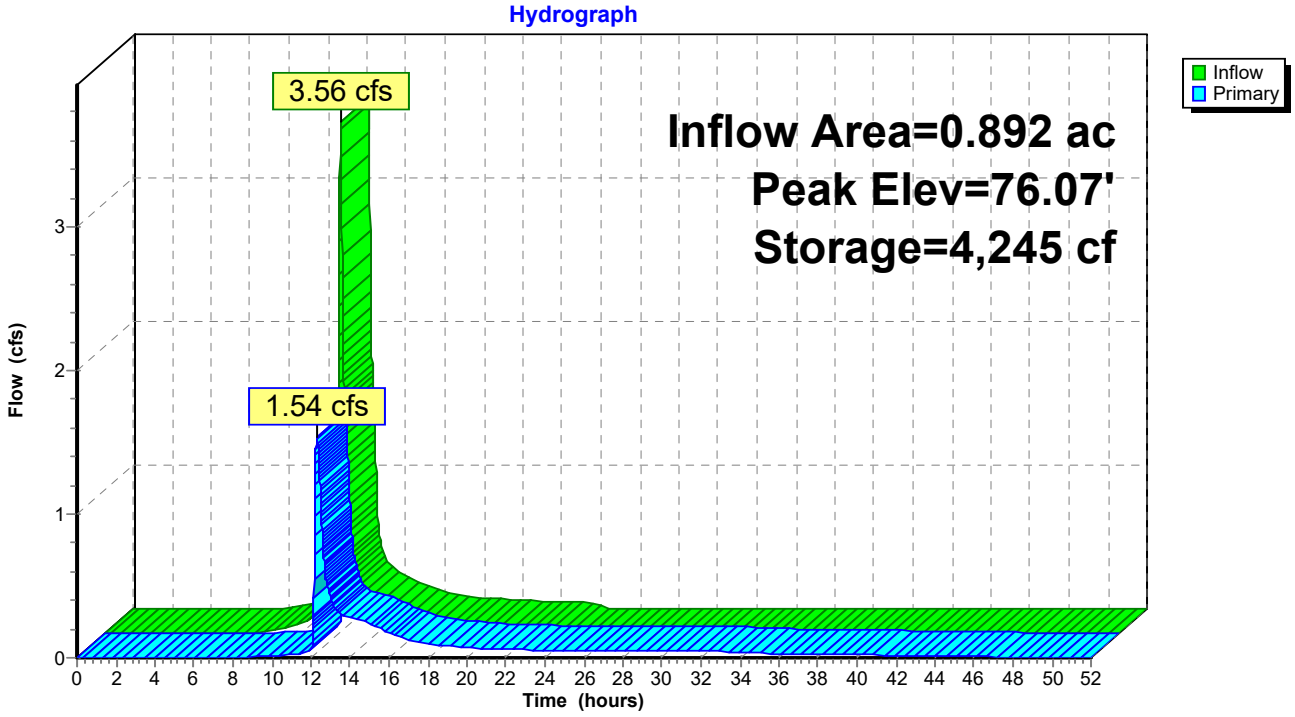
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
71.50	1,546	0	0
73.00	1,546	2,319	2,319

Device	Routing	Invert	Outlet Devices
#1	Primary	71.45'	**12.0" Round Culvert** L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 71.45' / 68.72' S= 0.0910 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	71.50'	**1.0" Vert. WQ Orifice** C= 0.600
#3	Device 1	75.35'	**4.0" Vert. Quantity Orifice** C= 0.600
#4	Device 1	75.85'	**4.0' long x 0.6' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 Coef. (English) 2.78 2.87 3.00 3.20 3.25 3.27 3.30 3.31 3.32
#5	Device 1	77.15'	**8.0" Vert. Beehive OCS RIM** C= 0.600
#6	Primary	77.40'	**10.0' long x 7.0' breadth Emergency Spillway**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Primary OutFlow Max=1.53 cfs @ 12.30 hrs HW=76.07' (Free Discharge)
- **1=Culvert** (Passes 1.53 cfs of 6.06 cfs potential flow)
  - **2=WQ Orifice** (Orifice Controls 0.06 cfs @ 10.25 fps)
  - **3=Quantity Orifice** (Orifice Controls 0.31 cfs @ 3.58 fps)
  - **4=Broad-Crested Rectangular Weir** (Weir Controls 1.16 cfs @ 1.31 fps)
  - **5=Beehive OCS RIM** (Controls 0.00 cfs)
- **6=Emergency Spillway** (Controls 0.00 cfs)

Pond 1-2: VUSF 2



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ACORN
ENGINEERING, INC.

K. EROSION & SEDIMENTATION CONTROL REPORT

Prepared For:

Giri Hotel Management
225 W Squantum Street, Suite 202
Quincy, MA 02171

Prepared By:

Acorn Engineering, Inc.
P.O. Box 3372
Portland, Maine 04104



February 2024

INTRODUCTION

Acorn Engineering, Inc. has been retained by Giri Hotel Management to provide civil engineering services for the proposed work located at 1060 Westbrook Street, Portland, ME 04102. The site is currently comprised of open space and drainage/detention ponds. The site is proposed to be developed into a 120-room 3-story Hyatt Studios, with a 105-space parking lot, and other site and utility improvements.

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 is located at 1060 Westbrook Street. Refer to the Boundary/Topographic Survey dated February 1, 2020 prepared by Spurwink Surveying inc. for existing conditions.

Abutting Uses:

- North AB Zone — Retail Services
- East AB Zone — United States Dept. of Transportation (Jetport)
- South AB Zone — Hotel & Motel
- West AB Zone — Multi-Use Commercial

0.3% of the existing site is comprised of impervious surface mainly an existing bituminous access drive isle. The average slope is moderate with grades dropping from West to East.

1.1 Existing 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;12/8/20 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
Lamoine Silt Loam	0.37	0.24
Scantic Silt Loam	0.49	0.49

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 soil "K" values for the soils show a moderate 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

There are no existing signs of erosion.

1.3 Critical Areas

Critical areas that would require special attention during construction consist of the slopes adjacent to the existing manmade detention areas.

1.4 Protected Natural Resource

The client is not aware of the presence of any existing significant natural features located on the site as listed in Section 14-526 (b) 1. 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 five years.

2.0 EROSION CONTROL MEASURES AND SITE STABILIZATION

As part of the site development, the following temporary and permanent erosion and sedimentation control devices shall be implemented. Devices shall be installed as described in this report or within the plan set. See the Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices for further reference.

2.1 Temporary Erosion Control Measures

The following temporary erosion and sedimentation control measures are planned for the project's construction period:

2.1.1 Crushed stone stabilized construction entrances shall be placed at all access points to the project site where there are disturbed areas. The following specifications shall be followed at a minimum:

- Stone size shall be 2-3 inches or reclaimed or recycled concrete equivalent.
- The thickness of the entrance stone layer shall be no less than 6 inches.
- The entrance shall not be less than 20 feet wide, however not less than the full width of points where ingress or egress occurs. The length shall not be less than 50 feet in length.
- Geotextile fabric (woven or non-woven) shall be placed over the entire entrance area.
- The entrance/exit shall be maintained to the extent that it will prevent the tracking of sediment onto public roadways.

2.1.2 Siltation fence or erosion control berm shall be installed down gradient of any disturbed areas to trap runoff borne sediments until permanent stabilization is achieved. The silt fence or erosion control berm shall be installed per the details provided in the plan set and inspected before and immediately after each rainfall and at least daily during prolonged rainfall. Repairs shall be made if there are any signs of erosion or sedimentation below the fence line or berm. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water behind the fence or berm, the barrier shall be replaced with a stone check dam.

2.1.3 Hay mulch including hydro seeding is intended to provide cover for denuded or seeded areas until revegetation is established. Mulch placed between April 15th and November 1st on slopes of less than 15 percent shall be covered by fabric netting and anchored with staples in accordance with the manufacturer's recommendation. Mulch placed between November 1st and April 15th on slopes equal to or steeper than 8 percent and equal to or flatter than 2:1 shall use mats or fabric netting and anchored with staples in accordance with the manufacturer's recommendation.

2.1.4 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 Westbrook Street and Jetport Boulevard shall be swept to control mud and dust from the construction site as necessary. Add additional stone to the stabilized construction entrance to minimize the tracking of material off the site and onto the surrounding roadways.

2.1.6 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 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 of 4" of loam, limed, and mulched. Erosion control blankets or mats shall be placed over the mulch in areas noted in paragraph 4.1 of this report.

2.2.2 All stormwater devices shall be installed, and tributary areas stabilized prior 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 Erosion and Sedimentation Control Plan is included within the plan set.

4.0 DETAILS AND SPECIFICATIONS

4.1 Erosion Control Details and Specifications are included in the plan set.

5.0 STABILIZATION PLAN FOR WINTER CONSTRUCTION

Winter Construction consists of earthwork disturbance between the dates of November 1 and April 15. If a construction site is not stabilized with pavement, a road gravel base, 75% mature vegetation cover or riprap by November 15, then the site shall be protected with over-winter stabilization. Any area not stabilized with pavement, vegetation, mulching, erosion control mix, erosion control mats, riprap, or gravel base on a road shall be considered open.

The contractor shall limit the work area to areas that work will occur in during the subsequent 15 days and so that it can be mulched one day prior to a snow event. The contractor shall stabilize work areas prior to opening additional work areas to minimize areas without erosion control measures.

The following measures shall be implemented during winter construction periods:

5.1 Sediment Barriers

During frozen conditions, sediment barriers may consist of erosion control mix berms or any other recognized sediment barriers as frozen soil prevents the proper installation of hay bales or silt fences.

5.2 Mulching

All areas shall be considered to be denuded until seeded and mulched. Hay and straw mulch shall be applied at a rate of 150 lb. per 1,000 square feet or 3 tons/acre (twice the normal accepted rate of 75-lbs./1,000 s.f. or 1.5 tons/acre) and shall be properly anchored. Erosion control mix must be applied with a minimum 4-inch thickness. Mulch shall not be spread on top of snow. The snow shall be removed down to a one-inch depth or less prior to application. After each day of final grading, the area shall be properly stabilized with anchored hay or straw or erosion control matting. An area shall be considered to have been stabilized when exposed surfaces have been either mulched or adequately anchored so that ground surface is not visible through the mulch. Between the dates of November 1 and April 15, all mulch shall be anchored by either mulch netting, tracking or wood cellulose fiber. The cover will be considered sufficient when the ground surface is not visible through the mulch. After November 1st, mulch and anchoring of all exposed soil shall occur at the end of each final grading workday.

5.3 Soil Stockpiling

Stockpiles of soil or subsoil shall be mulched for over winter protection with hay or straw at twice the normal rate or with a four-inch layer of erosion control mix. This shall be done within 24 hours of stocking and re-established prior to any rainfall or snowfall.

5.4 Seeding

Between the dates of October 15th and April 1st, loam or seed shall not be required. During periods of above freezing temperatures finished areas shall be fine graded and either protected with mulch or temporarily seeded and mulched until the final treatment can be applied. If the date is after November 1st and if the exposed area has not been loamed, final grading with a uniform surface, then the area may be dormant seeded at a rate of 3 times higher than specified for permanent seed and then mulched.

Dormant seeding may be placed prior to the placement of mulch or erosion control blankets. If dormant seeding is used for the site, all disturbed areas shall receive 4" of loam and seed at an application rate of 5 lbs./1,000 s.f. All areas seeded during the winter shall be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 75% catch) shall be revegetated by replacing loam, seed and mulch. If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.

5.5 Over winter stabilization of disturbed soils

By September 15th, all disturbed soils on areas having a slope less than 15% shall be seeded and mulched. If the disturbed areas are not stabilized by this date, then one of the following actions shall be taken to stabilize the soil for late fall and winter:

- Stabilize the soil with temporary vegetation – By October 1st, seed the disturbed soil with winter rye at a seeding rate of 3lbs per 1,000 s.f., lightly mulch the seeded soil with hay or straw at 75 lbs per 1,000 s.f., and anchor the mulch with plastic netting. Monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed soil before November 1st, then mulch the area for over-winter protection.

- Stabilize the soil with sod – Stabilize the disturbed soil with properly installed sod by October 1st. Proper installation includes pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.

- Stabilize the soil with mulch – By November 15th, mulch the disturbed soil by spreading hay or straw at a rate of at least 150 lbs per 1,000 s.f. on the area so that no soil is visible through the mulch. Immediately after applying the mulch, anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

5.6 Over winter stabilization of disturbed slopes

All stone-covered slopes shall be constructed and stabilized by November 15th. All slopes to be vegetated shall be seeded and mulched by September 1st. A slope is considered a grade greater than 15%. If a slope to be vegetated is not stabilized by September 1st, then one of the following actions shall be taken to stabilize the slope for late fall and winter:

- Stabilize the soil with temporary vegetation and erosion control mats – By October 1st the disturbed slope shall be seeded with winter rye at a seeding rate of 3 lbs per 1,000 s.f. and then install erosion control mats or anchored mulch over the seeding. If the rye fails to grow at least three inches or fails to cover at least 75% of the slope by November 1st, then the contractor shall cover the slope with a layer of erosion control mix or with stone riprap.

- Stabilize the soil with sod – The disturbed slope shall be stabilized with properly installed sod by October 1st. Proper installation includes the contractor pinning the sod onto the slope with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The contractor shall not use late-season sod installation to stabilize slopes having a grade greater than 3H:1V or having groundwater seeps on the slope face.

- Stabilize the soil with erosion control mix – Erosion control mix shall be properly installed by November 15th. The contractor shall not use erosion control mix to stabilize slopes having grades greater than 2H:1V or having groundwater seeps on the slope face.

- Stabilize the soil with stone riprap – Place a layer of stone riprap on the slope by November 15th. A registered professional engineer shall be hired to determine the stone size needed for stability on the slope and to design a filter layer underneath the riprap.

6.0 INSPECTION AND MAINTENANCE

A person with knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct periodic visual inspections of installed erosion control measures. The frequency of inspection shall occur at least once every two weeks, as well as after a "storm event". A "storm event" shall consist 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. When the control pad becomes ineffective, the stone shall be removed along with the collected soil material and redistributed on site in a stable manner. The entrance should then be reconstructed. The contractor shall sweep or wash pavement at exits, which have experienced mud-tracking on to the pavement or traveled way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment trapping device. All sediment shall be prevented from entering storm drains, ditches, or waterways.

6.3 Mulched Areas

All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional mulch shall be immediately applied. Nets must be inspected after rain events for dislocation or failure. If washouts or breakage occur, re-install the nets as necessary after repairing damage to the slope. Where mulch is used in conjunction with ornamental plantings, inspect periodically throughout the year to determine if mulch is maintaining coverage of the soil surface. Repair as needed.

6.4 Dust Control

When temporary dust control measures are used, repetitive treatment shall be applied as needed to accomplish control.

6.5 Stormwater Appurtenances

All underdrains, storm drains, and catch basins need to be operating effectively and free of debris.

6.6 Erosion and Sedimentation Control Inspections:

Acorn Engineering has personnel qualified to conduct Erosion and Sedimentation Control Inspections. For further information, contact:

Contact: Peter Heil, PE
Telephone: (207) 775-2655

Qualifications:

- Maine Professional Engineering License #15318
- Maine DEP - Certified in Maintenance & Inspection of Stormwater BMP's
- Maine DEP – Certified Third-Party Inspector
- Certified Professional in Erosion and Sediment Control (CPESC) Cert. #7071

The Contractor has sole responsibility for complying with the Erosion and Sedimentation Report/Plan, including control of fugitive dust. The Contractor shall be responsible for any monetary penalties resulting from failure to comply with these standards.

7.0 IMPLEMENTATION SCHEDULE

The following implementation sequence is intended to maximize the effectiveness of the above described erosion control measures. Contractors should avoid overexposing disturbed areas and limit the amount of stabilization area.

1. Install a stabilized construction entrance in all locations where construction traffic will enter and exit the site.
2. Install perimeter silt fence or erosion control berm.
3. Commence installation of drainage infrastructure.
4. Install all other erosion control devices as necessary throughout the remainder of this schedule.
5. Commence earthwork operations, associated with the roadway 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, 90% catch of grass has been obtained, or 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 of all temporary and permanent erosion control measures throughout the project.

The above implementation sequence should be generally followed by the site contractor. However, the contractor may construct several items simultaneously. The contractor shall submit to the owner a schedule of the completion of the work. If the contractor is to commence the construction of more than one item above, they shall limit the amount of exposed areas to those areas in which work is expected to be undertaken during the following 30 days.

The contractor shall re-vegetate disturbed areas as rapidly as possible. All areas shall be permanently stabilized within 7 days of final grading or before a storm event. The contractor

shall incorporate planned inlets and drainage systems as early as possible into the construction phase.

8.0 CONCLUSION

The above erosion control narrative is intended to minimize the development impact by implementing temporary and permanent erosion control measures. The contractor shall also refer to the Maine Erosion and Sediment Control BMP manual for additional information.

9.0 ATTACHMENTS

- Temporary Seeding Plan
- Permanent Seeding Plan
- Housekeeping Plan
- Hydrological Soil Group Map (Web Soil Survey)
- Geotechnical Report – Prepared by Summit Geoengineering Services
- Natural Resource Delineation – Prepared by Flycatcher, LLC

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.

HOUSEKEEPING PLAN

The following housekeeping plan has is developed in accordance with Maine DEP Chapter 500 Stormwater Management standards. For additional information, reference Appendix C of Chapter 500.

1. **Spill prevention.** Controls must be used to prevent pollutants from construction and waste materials stored on site to enter stormwater, which includes storage practices to minimize exposure of the materials to stormwater. The site contractor or operator must develop, and implement as necessary, appropriate spill prevention, containment, and response planning measures.

NOTE: Any spill or release of toxic or hazardous substances must be reported to the Department. For oil spills, call 1-800-482-0777 which is available 24 hours a day. For spills of toxic or hazardous material, call 1-800-452-4664 which is available 24 hours a day. For more information, visit the Department's website at : http://www.maine.gov/dep/spills/emergspillresp/

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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.

   See Chapter 500 Appendix D for license by rule standards for infiltration of stormwater.

NOTE: Lack of appropriate pollutant removal best management practices (BMPs) may result in violations of the groundwater quality standard established by 38 M.R.S.A. §465-C(1).

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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.

NOTE: Dewatering a stream without a permit from the Department may violate state water quality standards and the *Natural Resources Protection Act*.

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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.

NOTE: To prevent these materials from becoming a source of pollutants, construction and post-construction activities related to a project may be required to comply with applicable provision of rules related to solid, universal, and hazardous waste, including, but not limited to, the Maine solid waste and hazardous waste management rules; Maine hazardous waste management rules; Maine oil conveyance and storage rules; and Maine pesticide requirements.

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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.

NOTE: Dewatering controls are discussed in the "Maine Erosion and Sediment Control BMPs, Maine Department of Environmental Protection."

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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 Section 3, above;

   (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 Section 5, above);

(k) Potable water sources including waterline flushings; and

(l) Landscape irrigation.

7. **Unauthorized non-stormwater discharges.** The Department's approval under Chapter 500 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 Department'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.

(8) Additional requirements. Additional requirements may be applied on a site-specific basis.

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



November 9, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Preface..... 2
Soil Map..... 5
Soil Map.....6
Legend.....7
Map Unit Legend..... 9
Map Unit Descriptions..... 9
Cumberland County and Part of Oxford County, Maine.....11
BuB—Lamoine silt loam, 3 to 8 percent slopes.....11
Sn—Scantic silt loam, 0 to 3 percent slopes.....12
Soil Information for All Uses.....13
Soil Properties and Qualities..... 13
Soil Qualities and Features.....13
Hydrologic Soil Group..... 13
References.....19

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.



Map Scale: 1:1,240 if printed on A portrait (8.5" x 11") 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 20, Sep 5, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

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
BuB	Lamoine silt loam, 3 to 8 percent slopes	2.5	60.8%
Sn	Scantic silt loam, 0 to 3 percent slopes	1.6	39.2%
Totals for Area of Interest		**4.0**	**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

BuB—Lamoine silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t0kc
Elevation: 10 to 490 feet
Mean annual precipitation: 33 to 60 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Lamoine and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lamoine

Setting

Landform: River valleys, marine terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine glaciomarine deposits

Typical profile

Ap - 0 to 7 inches: silt loam
Bw - 7 to 13 inches: silt loam
Bg - 13 to 24 inches: silty clay loam
Cg - 24 to 65 inches: silty clay

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 17 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F144BY401ME - Clay Flat
Hydric soil rating: No

Sn—Scantic silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2slv3
Elevation: 10 to 900 feet
Mean annual precipitation: 33 to 60 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Scantic and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scantic

Setting

Landform: River valleys, marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Glaciomarine deposits

Typical profile

Ap - 0 to 9 inches: silt loam
Bg1 - 9 to 16 inches: silty clay loam
Bg2 - 16 to 29 inches: silty clay
Cg - 29 to 65 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: F144BY304ME - Wet Clay Flat
Hydric soil rating: Yes

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

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:

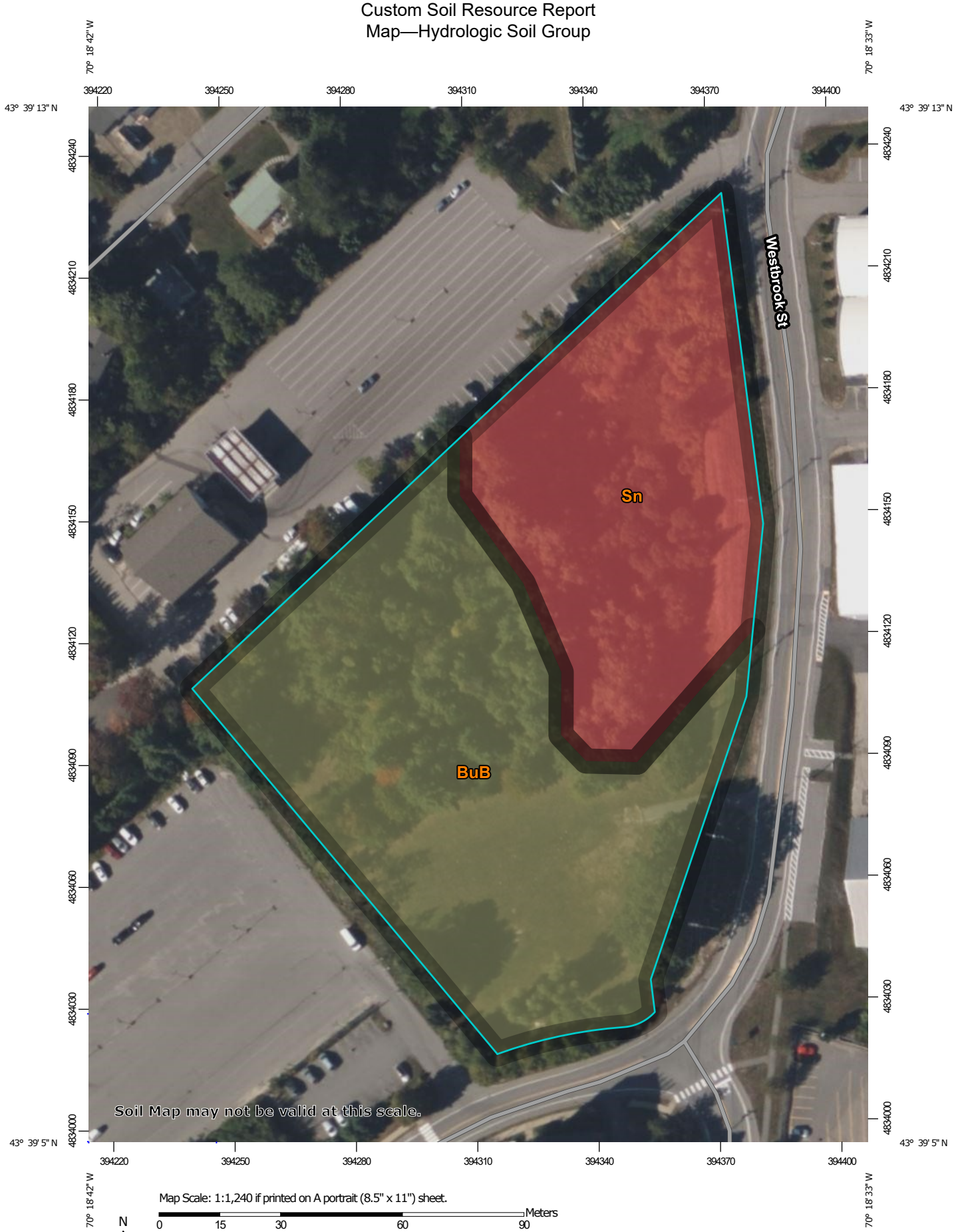
Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

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.



Map Scale: 1:1,240 if printed on A portrait (8.5" x 11") 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

15

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 20, Sep 5, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BuB	Lamoine silt loam, 3 to 8 percent slopes	C/D	2.5	60.8%
Sn	Scantic silt loam, 0 to 3 percent slopes	D	1.6	39.2%
Totals for Area of Interest			**4.0**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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Geotechnical Report

Residential Inn Jetport

1060 Westbrook Street, Portland, Maine



Client

Giri Hotel Management
225 West Squantum Street, #200
Quincy, Massachusetts 02171

Project #: 20051.1
Date: 11/22/2023

SUMMIT
GEOENGINEERING SERVICES

Mailing: PO Box 515, Gardiner, ME 04345
Office: 210 Maine Avenue, Farmingdale, ME 04344
www.summitgeoeng.com

November 22, 2023
Summit #20051.1

Attn: Ankur Patel
Giri Hotel Management
225 West Squantum Street, #200
Quincy, MA 02171

Reference: Geotechnical Engineering Services
Residential Inn Jetport – 1060 Westbrook Street, Portland, Maine

Dear Mr. Patel;

Summit Geoengineering Services (SGS) has completed the geotechnical investigation for the proposed Residential Inn hotel located at 1060 Westbrook Street in Portland, Maine. The scope of services consisted of conducting subsurface explorations at the site and preparing this report summarizing the findings and geotechnical recommendations.

A total of 13 test pits were performed at the site located within the building footprint and potential detention ponds. Previously, 3 test borings and 3 ledge probes were performed at the site by SGS with the results included in this report. Subgrade at the site is comprised of topsoil overlying reworked native, glacial marine deposit, and weathered rock. Refusal was met on bedrock at depths ranging from 1.2 to 9.8 feet below ground surface (BGS). Groundwater was observed in test pits TP-3, TP-4, and TP-8 at a depth range of 2.0 to 6.8 feet BGS.

This report provides discussion of the geotechnical findings and design recommendations for the new hotel foundation, pavement areas, retaining walls, and stormwater treatment areas. This geotechnical evaluation is based on concept site plan C-10 prepared by Acorn Engineering, Inc. SGS appreciates the opportunity to serve you during this phase of your project. If there are any questions or additional information is required, please do not hesitate to call.

Sincerely yours,
Summit Geoengineering Services



Jason Barnes, E.I.
Geotechnical Engineer





Craig Coolidge, P.E.
Principal and Vice President

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Office: 210 Maine Avenue, Farmingdale, ME 04344
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TABLE OF CONTENTS

1.0 Project and Site Description 3
2.0 Subsurface Explorations 3
2.1 Subsurface Explorations 3
3.0 Subsurface Conditions 3
3.1 Soil Layers 3
3.2 Bedrock 4
3.3 Groundwater 4
4.0 Geotechnical Evaluation 4
5.0 Geotechnical Recommendations 5
5.1 Bearing Capacity and Settlement 5
5.2 Frost Protection 6
5.3 Building and Elevator Pit Slabs 6
5.4 Site Fill 6
5.5 Seismic Design 7
5.6 Groundwater Control 7
6.0 Pavement Section Recommendations 7
7.0 Retaining Wall Recommendations 8
8.0 Stormwater Treatment Areas 9
9.0 Earthwork Considerations 9
10.0 Closure 10
Exploration Location Plan, Cross Sections ..... Appendix A
Exploration Summary Table, Exploration Logs ..... Appendix B
Footing Transition Detail ..... Appendix C

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1.0 Project and Site Description

Summit Geoengineering Services (SGS) was asked by Giri Hotel Management to conduct a geotechnical investigation for a proposed Residential Inn at 1060 Westbrook Street in Portland, Maine. The site is located at the intersection of Jetport Boulevard and Westbrook Street, north of the Jetport. The proposed development consists of a multi-story hotel building with an approximate footprint of 20,000 square feet with an elevator connecting the levels. The proposed finished floor elevation for the building is 87 feet. A retaining wall is planned at the northwest portion of the building to retain site fill. The proposed building will have a parking lot to the north and east. Two proposed stormwater treatment areas are proposed in the eastern and northern portion of the site.

2.0 Subsurface Explorations

2.1 Subsurface Explorations

SGS observed the subsurface conditions with the digging of 13 test pits on November 3, 2023. SGS previously performed three test borings and three ledge probes at the site on March 9, 2020. Test pits were performed using a Kubota KX040 excavator. Test pits were performed to a depth of bedrock refusal, which ranged from 1.2 to 9.8 feet BGS. The soils were classified by a geotechnical engineer using the Unified Soil Classification System (USCS).

The test pits were approximately located by SGS using a handheld GPS and pre-marked prior to digging for notification of Dig Safe. An Exploration Location Plan is included in Appendix A. An Exploration Summary and Logs are included in Appendix B.

3.0 Subsurface Conditions

The subsurface conditions consist of ***topsoil***, overlying ***reworked native*** and ***glacial marine deposits.*** The soil layers are further described below. Details of the explorations are provided on the Exploration Summary and Logs in Appendix B.

3.1 Soil Layers

Topsoil is present at the ground surface with a thickness ranging from 0.1 to 1 foot. The topsoil consists of dark brown to brown sandy silt with rootlets and classifies as ML in accordance with the Unified Soil Classification System (USCS). The topsoil is considered soft and humid to damp.

Reworked native soil is present in the southern, cleared portion of the site at test pits TP-8, TP-7, and TP-11. The reworked soil consists of brown sandy silt with little to some gravel and trace to little clay. Frequent large cobbles to boulders, large wood pieces, and abandoned copper pipe is present within the reworked layer. The reworked soil is considered firm to stiff and humid to damp. The reworked soil visually classifies as ML in accordance with the USCS.

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Glacial marine deposit beneath the topsoil and/or reworked native soil consists of olive brown to light brown sandy silt to olive gray silty sand or silt-sand with trace gravel and little to some clay. The glacial marine deposit is considered firm to stiff and damp to wet. The marine deposit visually classifies as ML, SM, or ML-SM in accordance with the USCS.

3.2 Bedrock

Refusal on ***bedrock*** was encountered at depths ranging from 1.2 to 9.8 feet BGS. Intact bedrock is overlain by a weathered rock layer with a thickness ranging from 0.2 to 1.3 feet. Bedrock mapping for the site suggests that the bedrock consist of Eliot Formation, which is comprised of fine-grained quartz-plagioclase biotite phyllite. A summary of bedrock depths and elevations is provided in Appendix B in the Exploration Summary Table, which includes previous explorations performed by SGS at the site. Interpretive cross sections are also provided in Appendix A.

3.3 Groundwater

Groundwater was present in test pits TP-3, TP-4 and TP-8 at 1.8 feet BGS, 2.0 feet BGS, and 6.8 feet BGS respectively. SGS anticipates that localized groundwater may be present during the excavation for foundations. Groundwater may be susceptible to perching on glacial marine deposits or intact bedrock and may be present within the bedrock formation at greater depth. The presence of groundwater may fluctuate during wet periods such as rainfall and snowmelt.

4.0 Geotechnical Evaluation

Based on a finished floor elevation of 87 feet for the proposed hotel building, SGS anticipates the footings in site cut will be constructed on the bedrock surface and transition between bedrock and the glacial marine deposit where deeper soil pockets are present. Building sections within thicker fill will have footings constructed upon engineered backfill. Based on the existing site topography, SGS anticipates up to 10 feet of fill will be required to achieve finish grade. It is recommended that the northern portion of the building footprint be filled to finished grade, then excavated for footing construction. Application of fill prior to footing construction will apply compressive weight to the underlying glacial marine deposit to reduce total settlement.

The retaining wall is estimated at a height of 7 feet. Retaining walls should be constructed on Crushed Stone to stabilize its base located within glacial marine deposits.

Groundwater may be present in site cuts. Dewatering should be performed to maintain dry excavations. Underdrains should be utilized for foundations and retaining walls.

5.0 Geotechnical Recommendations

5.1 Bearing Capacity and Settlement

SGS recommends that the building foundation be designed using an allowable bearing pressure of 3,000 psf on soil and 6,000 psf on bedrock. Total settlement is estimated at 1-inch or less. Differential settlement is estimated at a deflection less than 1/300 (δ/L, deflection divided by span length). The bearing pressure is based on the following conditions:

- Topsoil and deleterious materials such as wood or large debris is removed from the new building footprint prior to placing fill or constructing foundations. It is recommended that SGS be made available to conduct subgrade inspections for foundations within native soil or bedrock, particularly areas overlying the reworked native soil.

- Footing which transition from bedrock to soil are constructed as shown on the Footing Transition Detail in Appendix C. Where shallow bedrock is present, SGS recommends a minimum 2-foot cover of soil. Footings on soil should be constructed 4 feet below exterior finish grade for frost protection.

- Footing subgrade which becomes soften or disturbed upon marine deposits and/or near groundwater should be stabilized with 12 inches of Crushed Stone.

SGS further recommends the following design parameters be used for foundation design:

PARAMETER	ENGINEERED FILL [1 & 2]	GLACIAL MARINE DEPOSIT
Total Natural (moist) Unit Weight (Υ_t)	130 pcf	120 pcf
Saturated (buoyant) Unit Weight (Υ_s)	68 pcf	58 pcf
Friction Coefficient (f)	0.55	0.40
Passive Earth Pressure Coefficient (K_p)	3.54	3.00
Active Earth Pressure Coefficient (K_a)	0.28	0.33
At Rest Pressure Coefficient (K_o)	0.44	0.50
Effective Friction Angle (ϕ')	34^0	30^0

[1] Based on 95% compaction by ASTM D1557, Modified Proctor Test Method
[2] Design values for compacted Structural Fill

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5.2 Frost Protection

Exterior footings should be constructed at a minimum depth of 4 feet below finished grade for frost protection. This frost protection depth is based on a design air-freezing index of 1,200-degree days for the Portland area. SGS recommends exterior and interior portions of foundation elements be backfilled with Foundation Backfill. Foundation Backfill should have a maximum particle size limited to 6 inches and portion passing a 3-inch sieve should meet the following specification:

FOUNDATION BACKFILL	
Sieve Size	**Percent Passing**
¼ inch	25 to 100
No. 40	0 to 50
No. 200	0 to 7

Reference: MDOT Specification 703.06, Type E (2020)

5.3 Building and Elevator Pit Slabs

SGS recommends the building and elevator pit slabs be constructed on a minimum of 12 inches of Gravel Borrow. The coefficient of subgrade reaction, k (per 12-inch plate) applies to the design of reinforced concrete foundations over soil. For the conditions described above, the slabs can be designed using a coefficient of subgrade reaction 150 tons/ft^3. SGS recommends sumps be installed within the elevator pit to prevent ponding of localized or seasonal groundwater.

5.4 Site Fill

SGS anticipates fill heights up to 10 feet are required at the northwestern portion of the building footprint. Import fill required to meet grades across the site for the building footprint, pavement areas, and retaining walls should consist of compacted Gravel Borrow. Gravel Borrow should consist of well graded granular material having no rocks with a maximum dimension over 6 inches. The portion passing a 3-inch sieve should meet the following gradation specification:

GRAVEL BORROW	
Sieve Size	**Percent Passing**
¼ Inch	0 to 70
No. 200	0 to 10

Reference: MDOT Specification 703.19, Gravel Borrow (2020)

Gravel Borrow should be placed in maximum 12-inch lifts and should be compacted to 95 percent of its maximum dry density determined in accordance with ASTM D1557. It is recommended that SGS be made available to review submittals and compaction testing reports to verify their conformance to the recommendations provided in this report.

5.5 Seismic Design

The soils at the site are categorized as Site Class C in accordance with ASCE 7-10. Soils encountered at the site are not considered susceptible to widespread liquefaction during earthquake. The following seismic site coefficients should be used:

SEISMIC DESIGN COEFFICIENTS – ASCE 7-10	
Seismic Coefficient	**Site Class C**
Peak Ground Acceleration (PGA)	0.132
Site Modified Peak Ground Acceleration (PGA_M)	0.159
Short period spectral response (S_S)	0.244
1 second spectral response (S_1)	0.079
Maximum short period spectral response (S_{MS})	0.293
Maximum 1 second spectral response (S_{M1})	0.134
Design short period spectral response (S_{DS})	0.195
Design 1 second spectral response (S_{D1})	0.089

5.6 Groundwater Control

SGS anticipates localized groundwater will be present in excavations performed in the northern portion of the site. Based on this, SGS recommends perimeter underdrains be installed at the base of the underground structures. In addition, exterior grades should slope away from the building footprint to reduce water runoff from infiltrating the foundation backfill soils.

Perimeter underdrains should consist of 4-inch rigid perforated PVC placed adjacent to the exterior footings and surrounded by a minimum of 6 inches of crushed stone wrapped in filter fabric to prevent clogging from the migration of the fine soil particles in the foundation backfill soils. The underdrain pipe should be outlet to a location where it will be free flowing. Where exposed at the ground surface, the ends of pipes should be screened or otherwise protected from entry and nesting of wildlife, which could cause clogging.

6.0 Pavement Section Recommendations

SGS understands the project includes new bituminous pavement sections for access drives and parking areas. The subgrade will consist of glacial marine deposits and imported fill. The mean annual freezing index for the Portland area is estimated at 900 degree-days. Based on the subgrade and mean annual freezing index, the mean annual frost penetration depth is 36 inches.

SGS recommends a minimum total bituminous pavement section thickness of 50% of the mean annual frost penetration or 18 inches for light duty sections and 60% of the mean annual frost penetration or 22 inches for sections subjected to moderate or heavy truckloads. SGS further recommends that the bituminous sections consist of the following materials:

MATERIAL	THICKNESS (in) Light Duty	THICKNESS (in) Heavy Duty	SPECIFICATION
Asphalt Surface Course	1	1.5	MDOT 703.09 Type 9.5 mm or Type 12.5 mm
Asphalt Binder Course	2	2.5	MDOT 703.09 Type 19 mm
Base Soil	3	6	MDOT 703.06 Type A
Subbase Soil	12	12	MDOT 703.06 Type D

For portions of the bituminous pavement subjected to light traffic loads of cars and light trucks we recommend MDOT Type 9.5mm surface course. Where heavy duty sections are needed for trucks, we suggest MDOT 703.09 Type 12.5mm for improved strength and durability of the asphalt surface. Base and Subbase (MDOT Type A and Type D) should meet the following gradation specifications:

Sieve Designation	Percent Passing a 3-inch Sieve	
	MDOT Type A (Base)	MDOT Type D (Subbase)
½ Inch	45 – 70	35 – 80
¼ Inch	30 – 55	25 – 65
No. 40	0 – 20	0 – 30
No. 200	0 – 6	0 – 7

Reference: MDOT Specification 703.06, Aggregate for Base and Subbase (2020)

Additional fill required beneath pavement sections should consist of compacted Gravel Borrow. Where encountered, SGS recommends topsoil and other deleterious materials be removed from beneath new pavement sections. Areas of over-excavation should be replaced with compacted Gravel Borrow or Crushed Stone.

7.0 Retaining Wall Recommendations

A retaining wall is proposed in the northwestern portion of the site. SGS anticipates that the retaining walls will consist of segmental blocks with reinforcing or gravity using mass extenders. The wall will retain site fill with a height of 7 feet. Global stability should be checked during design.

SGS recommends that segmental block MSE walls be backfilled with Gravel Borrow, compacted to 95% of its maximum dry density in accordance with ASTM D1557. The base of the retaining walls should be placed on a minimum of 6 inches of Crushed Stone. SGS recommends the soil properties in Section 5.2 be used for the design of segmental block retaining walls at the site.

Since segmental type block walls are tolerant of some movement and shifting, no minimum frost depth is required. A minimum embedment depth of 12 inches is recommended at the toe of the wall, or as governed by wall height and toe slope. Underdrains should be provided behind the segmental wall near its base to prevent the buildup of hydrostatic pressures.

8.0 Stormwater Treatment Areas

Two stormwater treatment areas are planned at the site. Test pit TP-11 was conducted at the center of the southeastern area to a depth of 3.8 feet BGS. Soil consists of glacial marine deposit (sandy silt) a weathered rock layer over intact bedrock. The infiltration capacity for the marine deposit (sandy silt) is considered semi-pervious and for the bedrock impervious.

The second stormwater treatment area is located to the north of the proposed building. Test pit TP-12 was conducted at the center of the pond to a depth of 2.5 feet BGS. Soil consists of glacial marine deposit (sandy silt) overlying sloping bedrock. No groundwater was encountered in the test pit. The infiltration capacity for the marine deposit (sandy silt) is considered semi-pervious and for the bedrock, impervious.

9.0 Earthwork Considerations

Topsoil and deleterious material should be stripped and grubbed from the ground surface prior to placing fill or constructing footings. Gravel Borrow and Foundation Backfill should be placed in maximum 12-inch lifts and compacted to a minimum of 95 percent of their maximum dry density, determined in accordance with ASTM D1557, Modified Proctor Density.

Utility trenching and general excavations below 4 feet should be sloped no greater than 1H to 1V for cohesive soil and 1.5H to 1V (OHSA Type C) for granular soils and/or below groundwater. These slopes are based on the current OSHA Excavation Guidelines.

Dewatering may be required within excavations. SGS believes that shallow sumps and conventional submersible pumps will be sufficient to control groundwater and infiltrating water during construction. Diversion and control of water should be performed to prevent water flow from adjacent wet areas or from rain or snowmelt from entering the excavations.

Excavations within the glacial marine deposit could be susceptible to disturbance, particularly when wet. If subgrade softening occurs during construction, SGS recommends the base of the subgrade be over-excavated and replaced with 12-inches of Crushed Stone. Crushed Stone should be tamped to lock the stone structure together.

It is recommended the geotechnical engineer be retained to conduct subgrade inspections to confirm that soil conditions and construction methods are consistent with this report. It is recommended that a qualified testing agency inspect soil materials gradation and compaction during construction for conformance to the project specifications. Soil materials testing reports should be made available to the geotechnical engineer for review.

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10.0 Closure

The recommendations provided in this report are based on professional judgment and generally accepted principles of geotechnical engineering and project information provided by others. No other warranty is expressed or implied. Our evaluations and recommendations are based on discrete and widely spaced data points. Some changes in subsurface conditions from those presented in this report are anticipated to occur. Should these conditions differ materially from those described in this report, SGS should be notified so that we can re-evaluate our recommendations.

It is recommended that this report be made available to contractors for informational purposes and be incorporated in the construction Contract Documents. SGS should be retained to review final construction documents relevant to the recommendations in this report. SGS appreciates the opportunity to serve you during this phase of your project. If there are any questions or additional information is required, please do not hesitate to call.

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APPENDIX A

EXPLORATION LOCATION PLAN

CROSS SECTIONS

SCALE: 1" = 40'

0 20 40 80 120

LEGEND

- TP-10 — SUMMIT TEST PIT (NOVEMBER 3, 2023)
- B-1 — SUMMIT TEST BORING (MARCH 9, 2020)
- P-1 — SUMMIT TEST PROBE (MARCH 9, 2020)

WESTBROOK STREET

POTENTIAL VUSF 1

30' DRAINAGE EASEMENT

TP-12

B-2

P-2

PR. 83.50'±

WALL HIGH POINT:
BW: 74.67'±
TW: 82.75' ±

PR. 82 LF CONCRETE RETAINING WALL, TYP.
TO BE DESIGNED BY OTHERS. (6'± TALL)

20' STRUCTURE SETBACK
ON WESTBROOK STREET

CROSS SECTION E-E

PR. 82.25'±

24.00'

PR. LANDSCAPED ISLAND
MOUNDED TO DRAIN, TYP.

B-3

12 SPACES

8 SPACES

32 SPACES

24.00'

P-1

TP-3

TP-4

CROSS SECTION C-C

CROSS SECTION D-D

24.00'

8.00'

8.00'

5.00'

18.00'
TYP.

9.00'
TYP.

13 SPACES

P-3

TP-6

TP-7

TP-2

TP-5

CROSS SECTION B-B

PR. HOTEL BUILDING
19,559 SF FOOTPRINT
POTENTIAL FFE: 87'±

TP-13

B-1

PR. 84.85'±

24.00'

15 SPACES

24.00'

TP-1

TP-10

TP-9

TP-8

CROSS SECTION A-A

PR. 84.25'±

TP-11

POTENTIAL VUSF 2

PR. LANDSCAPED AREA TO BE
DESIGNED BY OTHERS, TYP.

PR. 285 LF CONCRETE RETAINING WALL, TYP.
TO BE DESIGNED BY OTHERS. (6'± TALL)

18" GRAVEL DRIP EDGE AT ALL
ROOF RUNOFF LOCATIONS, TYP.

PR. 24'X13' DUMPSTER
AREA, PER DETAIL

EX. GUARDRAIL TO REMAIN, TYP.

NORTH

EX. L.

EX. CONCRETE I.
"AUTHORIZED VEHIC.
SIGNAGE TO REMAIN

EX. STREET LIGHT TO REMA

EX. VERTICAL
GRANITE CURB, TYP.

PR. VERTICAL GRANITE
CURB PER DETAIL, TYP.

EX. DRAINAGE
MANHOLE, TYP. (OF 12)

EX. CATCH BASIN, TYP.
(OF 9)

EX. E

PR. PAVEMENT, TYP.

APPR
EMBA

EX. ONE-WAY

EX. 74.00'

PR. 15" CULVERT TO BE
INSTALLED BELOW PR.
DRIVEWAY APRON

PLAN REFERENCES

"CONCEPT SITE PLAN - 1, RESIDENTIAL INN JETPORT", DATED FEBRUARY 7, 2020, PREPARED BY ACORN ENGINEERING, INC.

PROJECT:
RESIDENTIAL INN, JETPORT
1060 WESTBROOK STREET - PORTLAND, ME

CLIENT:
GIRI HOTEL MANAGEMENT

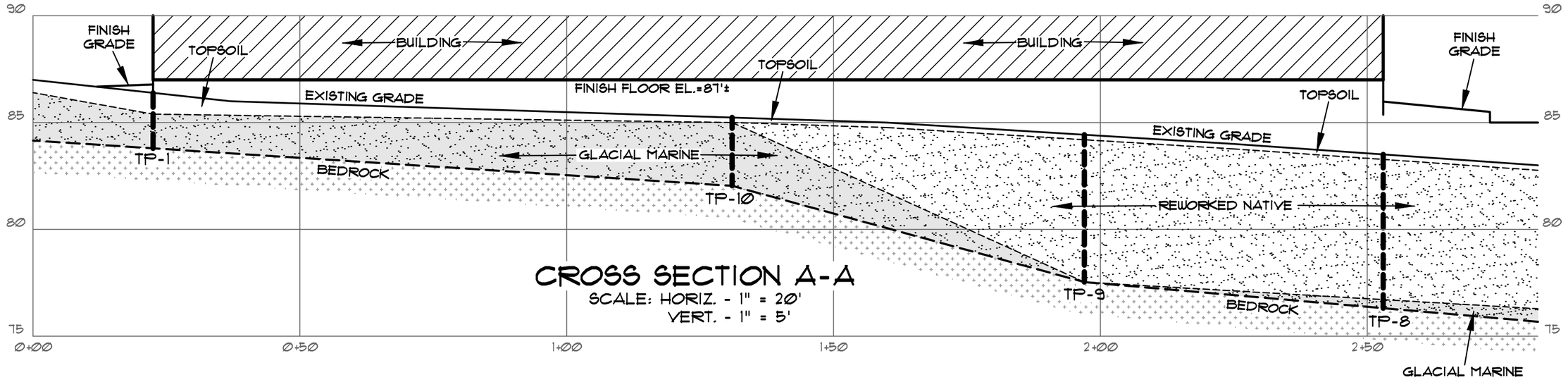
TITLE:
EXPLORATION LOCATION PLAN

DRAWN BY: KRF
APPR. BY: JNB
SCALE: 1" = 40'
DATE: NOV. 8, 2023

SUMMIT
GEOENGINEERING SERVICES
MAIL: P.O. BOX 515
GARDINER, ME 04345
OFFICE: 210 MAINE AVENUE
FARMINGDALE, MAINE
TEL.: (207) 446-3360

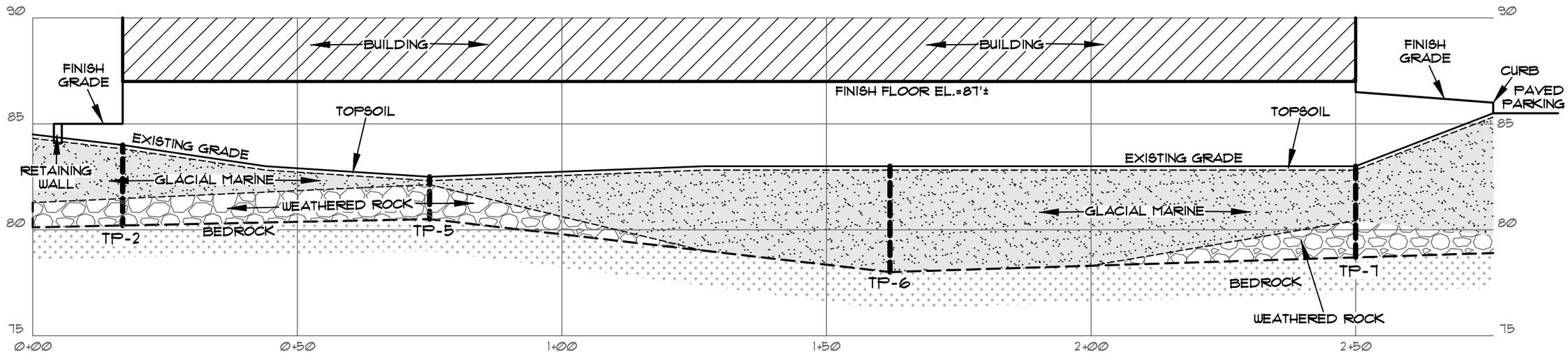
PROJ.#: 20051.1

FIGURE: 1



CROSS SECTION A-A

SCALE: HORIZ. - 1" = 20'
VERT. - 1" = 5'



CROSS SECTION B-B

SCALE: HORIZ. - 1" = 20'
VERT. - 1" = 5'

PROJECT:
RESIDENTIAL INN, JETPORT
1060 WESTBROOK STREET - PORTLAND, ME

CLIENT:
GIRI HOTEL MANAGEMENT

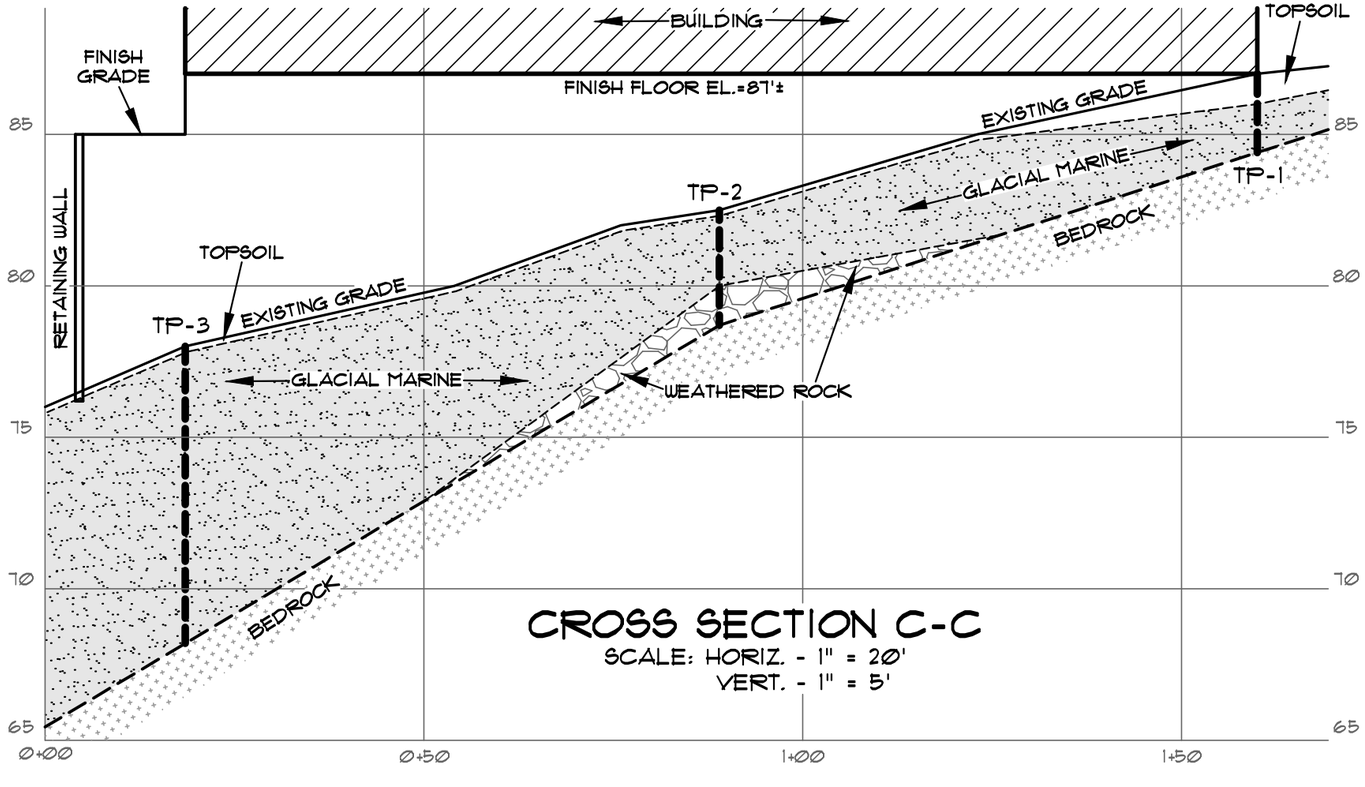
TITLE:
CROSS SECTIONS
A-A AND B-B

SCALE: AS NOTED
DRAWN BY: KRF
DATE: NOV. 10, 2023
APPR. BY: JNB/CWC

MAIL: P.O. BOX 515
GARDINER, ME 04345
OFFICE: 210 MAINE AVENUE
FARMINGDALE, MAINE
TEL.: (207) 446-3360
SUMMIT
GEOENGINEERING SERVICES

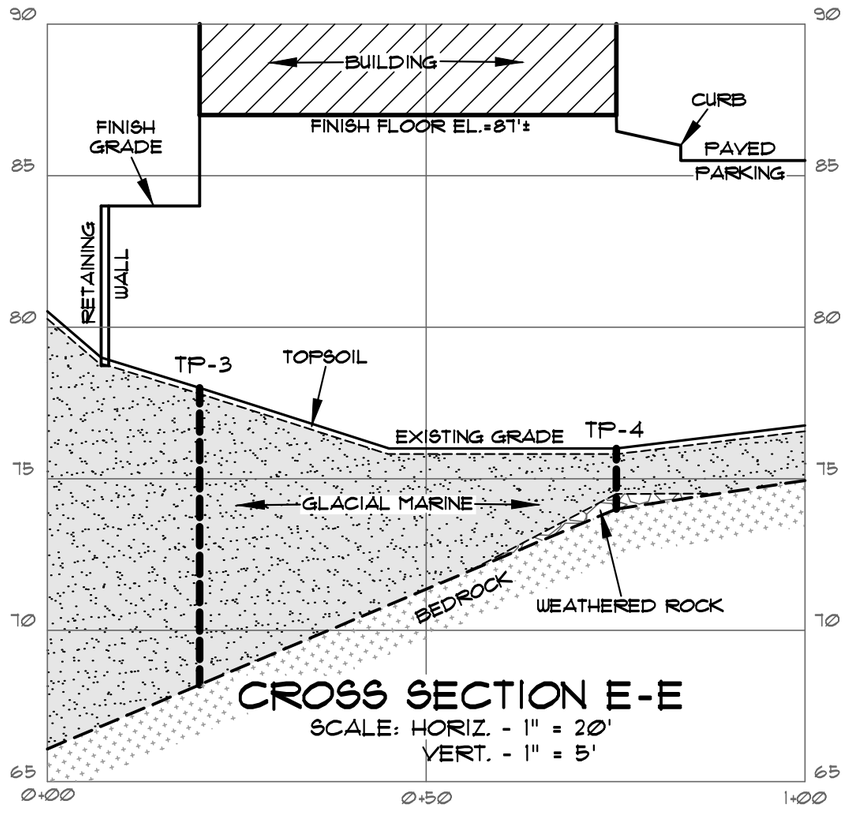
PROJ.#: 20051.1

FIGURE:
2



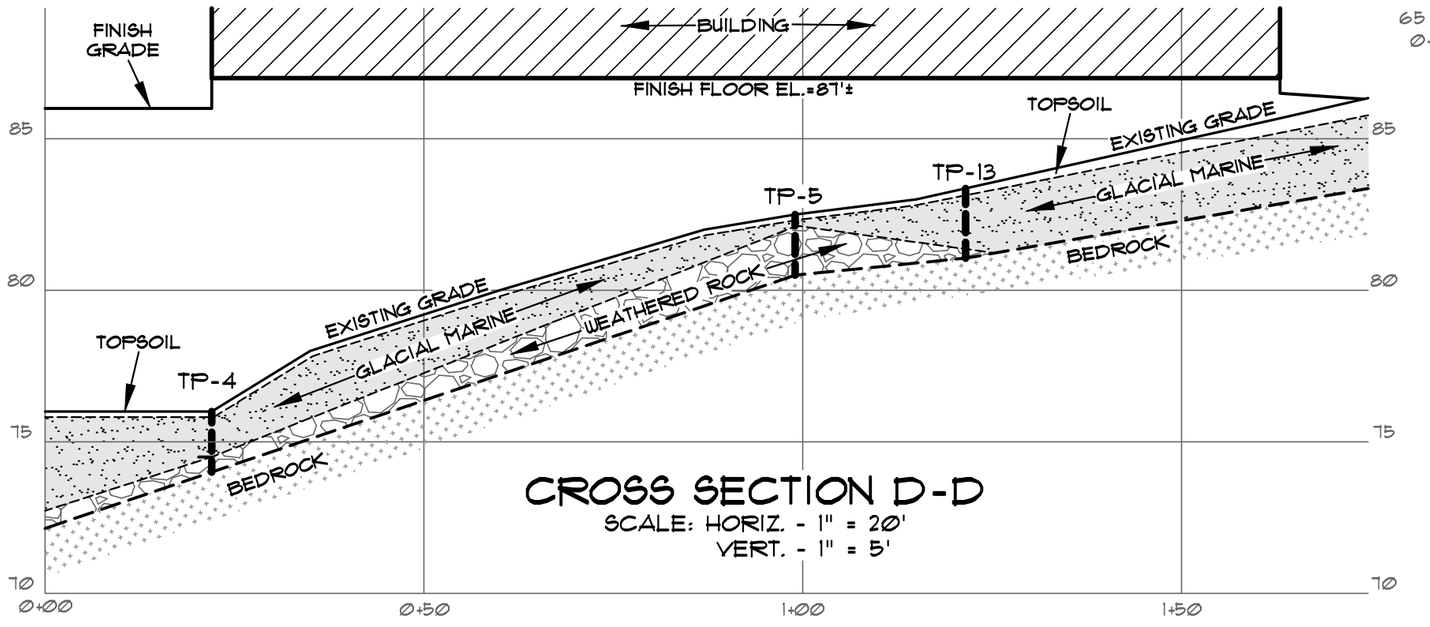
CROSS SECTION C-C

SCALE: HORIZ. - 1" = 20'
VERT. - 1" = 5'



CROSS SECTION E-E

SCALE: HORIZ. - 1" = 20'
VERT. - 1" = 5'



CROSS SECTION D-D

SCALE: HORIZ. - 1" = 20'
VERT. - 1" = 5'

PROJECT:
RESIDENTIAL INN, JETPORT
1060 WESTBROOK STREET - PORTLAND, ME

CLIENT:
GIRI HOTEL MANAGEMENT

TITLE: CROSS SECTIONS C-C, D-D AND E-E

SCALE: AS NOTED | DRAWN BY: KRF

DATE: NOV. 8, 2023 | APPR. BY: JNB/CWC

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FIGURE: 3

APPENDIX B

EXPLORATION SUMMARY TABLE

EXPLORATION LOGS

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:

SS = Split Spoon Sample
UT = Thin Wall Shelby Tube
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RW = Rotary Wash
SV = Shear Vane
PP = Pocket Penetrometer
RC = Rock Core Sample
FV = Field Vane Shear Test
PS = 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
W = Natural Water 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

Project Name: Residential Inn Jetport
Location: 1060 Westbrook Street, Portland, ME

Project Number: 20051.1
Date: 11/7/2023

EXPLORATION SUMMARY TABLE

EXPLORATION NUMBER	SURFACE ELEVATION (ft)	WEATHERED ROCK DEPTH (ft)	BEDROCK DEPTH (ft)	BEDROCK ELEVATION (ft)	GROUNDWATER DEPTH (ft)	NOTES
TP-1	86.0	NE	2.6	83.4	NE	N/A
TP-2	76.0	2.5	2.8	73.2	NE	N/A
TP-3	74.0	NE	9.8	64.2	1.8	N/A
TP-4	76.0	1.8	2.0	74.0	2.0	N/A
TP-5	84.0	0.2	2.6	81.4	NE	Sloping refusal at 1.2' and 1.9'
TP-6	83.0	NE	5.0	78.0	NE	N/A
TP-7	83.0	NE	4.3	78.7	NE	Potential bedrock at 2.8'
TP-8	83.0	NE	7.2	75.8	6.8	N/A
TP-9	83.0	NE	6.9	76.1	NE	N/A
TP-10	84.0	3.0	3.2	80.8	NE	N/A
TP-11	79.0	2.5	3.8	75.2	NE	N/A
TP-12	74.0	NE	2.5	71.5	NE	Refusal slopes from 1.2 to 2.5
TP-13	84.0	2.0	2.3	81.7	NE	N/A
B-1	84.0	1.0	1.9	82.1	NE	N/A
B-2	76.0	0.4	3.3	72.7	NE	N/A
B-3	78	5.2	6.5	71.5	NE	N/A
P-1	78	NE	1.8	76.2	NE	N/A
P-2	75	NE	1.3	73.7	NE	N/A
P-3	83	NE	1.2	81.8	NE	N/A

NOTES:

1.) Test pits were performed on 11/3/2023, test borings and probes were perfomred on 3/9/2020 under a separate scope of work.

2.) Test pit locations were marked using GPS coordinates by SGS.

3.) Test borings, probes, and test pits were advanced to bedrock refusal. Refusal depths were measured in the explorations to the nearest tenth of a foot. Corresponding refusal elevations are calculated based on surface elevations. Surface elevations were interpolated from the "Concept Site Plan" provided by Acorn Engineering, Inc.

4.) N/E = None Encountered, N/A = Not Applicable. BGS = Below ground surface.

5.) Color coding: Green = Test Pits, Orange = Test Borings, Blue = Ledge Probes

SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-1
	Project: Residential Inn Jetport 1060 Westbrook Street Portland, Maine	Project #: 20051.1 Groundwater: NA
Contractor: Summit Geoengineering Services	Ground Surface Elevation: 86 ft +/-	
Equipment: Kubota KX040 Excavator	Reference: "Concept Site Plan" provided by Acorn Engineering	
Summit Staff: J. Barnes, E.I.	Date: 11/3/2023	Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	GEOLOGIC/GENERAL
1	Dark brown Sandy SILT, rootlets, soft, humid, ML	TOPSOIL
2	Brown Sandy SILT, soft to firm, humid, ML Brown CLAY seam at 2', slightly mottled, stiff, damp, CL	1' GLACIAL MARINE DEPOSIT
3	End of Exploration at 2.6', Probable Bedrock	2.6' PROBABLE BEDROCK
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SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-2
	Project: Residential Inn Jetport 1060 Westbrook Street Portland, Maine	Project #: 20051.1 Groundwater: NA
Contractor: Summit Geoengineering Services	Ground Surface Elevation: 76 ft +/-	
Equipment: Kubota KX040 Excavator	Reference: "Concept Site Plan" provided by Acorn Engineering	
Summit Staff: J. Barnes, E.I.	Date: 11/3/2023	Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
	Brown Sandy SILT, roots and rootlets, damp, ML	TOPSOIL
1	Brown Sandy SILT, trace Gravel, humid to damp, stiff,	0.3'
2	ML	GLACIAL MARINE DEPOSIT
3	Gray weathered rock	2.5'
		WEATHERED BEDROCK
4	End of Exploration at 3.8', Refusal on Intact Bedrock	3.8'
		BEDROCK
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SUMMIT GEOENGINEERING SERVICES	**TEST PIT LOG**	Test Pit # **TP-3**
	Project: Residential Inn Jetport 1060 Westbrook Street Portland, Maine	Project #: 20051.1 Groundwater: 1.8 ft
Contractor: Summit Geoengineering Services	Ground Surface Elevation: 74 ft +/-	
Equipment: Kubota KX040 Excavator	Reference: "Concept Site Plan" provided by Acorn Engineering	
Summit Staff: J. Barnes, E.I.	Date: 11/3/2023	Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
1	Black Sandy SILT, roots, garbage and metal debris, damp, ML	TOPSOIL 0.2'
2	Olive brown Sandy SILT, stiff, humid to wet with depth, ML	GLACIAL MARINE DEPOSIT Groundwater seepage observed at 1.8'
3	Olive brown Sandy SILT, little gray Clay, stiff, wet, ML	
4	Same as above, some gray Clay at 3.5', stiff, wet, ML	
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11	End of Exploration at 9.8', Refusal on Probable Bedrock	9.8' PROBABLE BEDROCK
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SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-4
	Project: Residential Inn Jetport 1060 Westbrook Street Portland, Maine	Project #: 20051.1 Groundwater: 2 ft
Contractor: Summit Geoengineering Services	Ground Surface Elevation: 76 ft +/-	
Equipment: Kubota KX040 Excavator	Reference: "Concept Site Plan" provided by Acorn Engineering	
Summit Staff: J. Barnes, E.I.	Date: 11/3/2023	Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
	Dark brown to black Sandy SILT, roots, wet, ML	TOPSOIL
1	Light brown Silty SAND, little Clay, occasional cobbles, stiff, wet, SM	0.5' GLACIAL MARINE DEPOSIT
2	Weathered rock at 1.8'	1.8' WEATHERED ROCK
3	End of Exploration at 2', Refusal on Intact Bedrock	2' Groundwater seepage at 2' BEDROCK
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SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-5
	Project: Residential Inn Jetport 1060 Westbrook Street Portland, Maine	Project #: 20051.1 Groundwater: NA
Contractor: Summit Geoengineering Services	Ground Surface Elevation: 84 ft+/-	
Equipment: Kubota KX040 Excavator	Reference: "Concept Site Plan" provided by Acorn Engineering	
Summit Staff: J. Barnes, E.I.	Date: 11/3/2023	Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
1	Brown Sandy SILT, trace Clay, soft, humid to damp, ML	GLAICAL MARINE DEPOSIT
	Weathered Rock	0.2' WEATHERED ROCK
2	End of Exploration, Refusal on undulating Bedrock at 1.2'. 2.6', and 1.9'	1.2' to 2.6' BEDROCK
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SUMMIT GEOENGINEERING SERVICES	**TEST PIT LOG**	Test Pit # **TP-6**
	Project: Residential Inn Jetport 1060 Westbrook Street Portland, Maine	Project #: 20051.1 Groundwater: NA
Contractor: Summit Geoengineering Services	Ground Surface Elevation: 83 ft+/-	
Equipment: Kubota KX040 Excavator	Reference: "Concept Site Plan" provided by Acorn Engineering	
Summit Staff: J. Barnes, E.I.	Date: 11/3/2023	Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
1	Olive brown SAND, litte to some Silt and Gravel, occasional Clay and Silt seams, loose, damp, SM	GLACIAL MARINE DEPOSIT
2		
3		
4		
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6	Refusal at 5' on Bedrock	5' BEDROCK
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SUMMIT GEOENGINEERING SERVICES	**TEST PIT LOG**	Test Pit # **TP-7**
	Project: Residential Inn Jetport 1060 Westbrook Street Portland, Maine	Project #: 20051.1 Groundwater: NA
Contractor: Summit Geoengineering Services	Ground Surface Elevation: 83 ft +/-	
Equipment: Kubota KX040 Excavator	Reference: "Concept Site Plan" provided by Acorn Engineering	
Summit Staff: J. Barnes, E.I.	Date: 11/3/2023	Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
	Brown Sandy SILT, rootlets, damp, ML	TOPSOIL
1	Brown Sandy SILT, little to some Gravel, frequent large cobbles to boulders, soft to firm, ML	0.5' REWORKED NATIVE
2		
3	Refusal on large boulder or Bedrock at east end of Exploration, extended test pit east to verify	2.8' LARGE BOULDER OR BEDROCK
4		
5	End of Exploration, Refusal in west portion of Exploration at 4.3' on Probable Bedrock	4.3' PROBABLE BEDROCK
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SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-8
	Project: Residential Inn Jetport 1060 Westbrook Street Portland, Maine	Project #: 20051.1 Groundwater: 6.8 ft
Contractor: Summit Geoengineering Services	Ground Surface Elevation: 83 ft +/-	
Equipment: Kubota KX040 Excavator	Reference: "Concept Site Plan" provided by Acorn Engineering	
Summit Staff: J. Barnes, E.I.	Date: 11/3/2023	Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
	Brown Sandy SILT, damp, ML	TOPSOIL
1	Brown Sandy SILT, little to some Gravel, trace Clay,	0.1'
	frequent large cobbles and boulders, stiff, humid, ML	REWORKED NATIVE
2		
3	Large piece of wood, approximately 4' long, at 2.8'	
	Gray Silty SAND to SILT-SAND observed on wood	
4	Thin copper pipe at 3.5' (1" diameter)	
5		
6		Groundwater seepage observed at 6.8'
7	Gray SILT-SAND to Silty SAND, wet, soft to firm,	6.8'
	ML-SM	GLACIAL MARINE DEPOSIT
8	End of Exploration, Refusal on Probable Bedrock	7.2'
9		PROBABLE BEDROCK
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SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-9
	Project: Residential Inn Jetport 1060 Westbrook Street Portland, Maine	Project #: 20051.1 Groundwater: NA
Contractor: Summit Geoengineering Services	Ground Surface Elevation: 83 ft +/-	
Equipment: Kubota KX040 Excavator	Reference: "Concept Site Plan" provided by Acorn Engineering	
Summit Staff: J. Barnes, E.I.	Date: 11/3/2023	Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
	Brown Sandy SILT, rootlets, damp, ML	TOPSOIL
1	Brown Sandy SILT, little to some Gravel, soft to firm, humid to damp, ML	0.2' REWORKED NATIVE
2	Frequent large cobbles to boulders	
3		
4	Refusal on probable large boulder in northern portion of exploration	
5		
6	Mottled with trace Clay at 5' +/-, stiff, damp	
7		
8	End of Exploration at 6.9', Refusal on Probable Bedrock in southern poriton	6.9' PROBABLE BEDROCK
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SUMMIT GEOENGINEERING SERVICES	**TEST PIT LOG**	Test Pit # **TP-10**
	Project: Residential Inn Jetport 1060 Westbrook Street Portland, Maine	Project #: 20051.1 Groundwater: NA
Contractor: Summit Geoengineering Services	Ground Surface Elevation: 84 ft +/-	
Equipment: Kubota KX040 Excavator	Reference: "Concept Site Plan" provided by Acorn Engineering	
Summit Staff: J. Barnes, E.I.	Date: 11/3/2023	Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
	Brown Sandy SILT, roots, humid, ML	
1	Brown Sandy SILT, little Gravel, frequent large cobbles, firm, damp, ML	0.2' GLACIAL MARINE DEPOSIT
2		
3	Weathered rock pieces at 3'	
4	End of Exploration at 3.2', Refual on Probable Bedrock	3.2' PROBABLE BEDROCK
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SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-11
	Project: Residential Inn Jetport 1060 Westbrook Street Portland, Maine	Project #: 20051.1 Groundwater: NA
Contractor: Summit Geoengineering Services	Ground Surface Elevation: 79 ft +/-	
Equipment: Kubota KX040 Excavator	Reference: "Concept Site Plan" provided by Acorn Engineering	
Summit Staff: J. Barnes, E.I.	Date: 11/3/2023	Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
	Brown Sandy SILT, rootlets, humid, ML	TOPSOIL
1	Brown Sandy SILT, trace to little Gravel, firm, damp,	0.8'
	ML	GLACIAL MARINE DEPOSIT
2		
3	Weathered Rock	2.5'
		WEATHERED ROCK
4	End of Exploration, Refusal on Probable Bedrock at	3.8'
	3.8'	PROBABLE BEDROCK
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SUMMIT GEOENGINEERING SERVICES	**TEST PIT LOG**	Test Pit # **TP-12**
	Project: Residential Inn Jetport 1060 Westbrook Street Portland, Maine	Project #: 20051.1 Groundwater: NA
Contractor: Summit Geoengineering Services	Ground Surface Elevation: 74 ft +/-	
Equipment: Kubota KX040 Excavator	Reference: "Concept Site Plan" provided by Acorn Engineering	
Summit Staff: J. Barnes, E.I.	Date: 11/3/2023	Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
	Brown Sandy SILT, roots/rootlets, humid, ML	TOPSOIL
1	Brown Sandy SILT, trace Gravel, slight mottling,	0.2'
	firm to stiff, damp, ML	GLACIAL MARINE DEPOSIT
2		
3	End of Exploration , Refusal on Bedrock sloping	1.2' to 2.5'
	Southwest to Northeast from 1.2' to 2.5'	BEDROCK
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SUMMIT GEOENGINEERING SERVICES	**TEST PIT LOG**	Test Pit # **TP-13**
	Project: Residential Inn Jetport 1060 Westbrook Street Portland, Maine	Project #: 20051.1 Groundwater: NA
Contractor: Summit Geoengineering Services	Ground Surface Elevation: 84 ft +/-	
Equipment: Kubota KX040 Excavator	Reference: "Concept Site Plan" provided by Acorn Engineering	
Summit Staff: J. Barnes, E.I.	Date: 11/3/2023	Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
	Dark brown Sandy SILT, rootlets, damp, ML	TOPSOIL
1	Light brown Sandy SILT, firm, humid, ML	0.2'
		GLACIAL MARINE DEPOSIT
2		
	Weathered rock	2' WEATHERED ROCK
3	End of Exploration at 2.3, Refusal on Intact Bedrock	2.3'
		BEDROCK
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SUMMIT GEOENGINEERING SERVICES

SOIL BORING LOG

Project:	Residence Inn	Boring #:	**B-1**
Location:	1060 Westbrook Street	Project #:	20051
City, State:	Portland, Maine	Sheet:	1 of 1
		Chkd by:	MH

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	84.0 ft. +/-
Driller:	S. Floyd	Reference:	Interpolated from "Concept Site Plan - 1" by Acorn dated 2/7/20
Summit Staff:	M. Hardison, P.E.	Date started: 3/9/2020	Date Completed: 3/9/2020

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	24" SS
Model:	AMS Power Probe	Diameter:	2"OD/1.5"ID
Method:	3" Casing	Hammer:	140 lb
Hammer Style:	Auto	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
3/9/2020	None		None Encountered

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	S-1	24/20	0 to 2	WH		14" Dark brown to black fine to medium SAND		
1				1		little to some Silt, moist, very loose, frequent organics		TOPSOIL
				2		(leaf matter, rootlets) SP-SM		
2				50/5"		Dark blue angluar rock fragments, heavily mottled		WEATHERED BEDROCK
3						End of Boring at 1.9', Refusal on Probable Bedrock		BEDROCK
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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
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

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:	Residence Inn	Project #:	20051
Location:	1060 Westbrook Street	Sheet:	1 of 1
City, State:	Portland, Maine	Chkd by:	MH

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	76.0 ft. +/-
Driller:	S. Floyd	Reference:	Interpolated from "Concept Site Plan - 1" by Acorn dated 2/7/20
Summit Staff:	M. Hardison, P.E.	Date started: 3/9/2020	Date Completed: 3/9/2020

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	24" SS
Model:	AMS Power Probe	Diameter:	2"OD/1.5"ID
Method:	3" Casing	Hammer:	140 lb
Hammer Style:	Auto	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
3/9/2020	None		None Encountered

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	S-1	24/14	0 to 2	5		5" Forest Duff and Wood Pieces		FOREST DUFF/WOOD
1				7		Reddish brown angular GRAVEL (weathered bedrock		
				50/5"		fragments) little Sand, moist to wet, very dense,		WEATHERED
2				PROBE		moderately mottled, GP		BEDROCK
3						Advanced Speartip Probe - Very dense from 1.0'		
						to 3.3'		
4						End of Boring at 3.3', Refusal on Probable Bedrock		BEDROCK
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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
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

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-3**

Project:	Residence Inn	Project #:	20051
Location:	1060 Westbrook Street	Sheet:	1 of 1
City, State:	Portland, Maine	Chkd by:	MH

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	78.0 ft. +/-
Driller:	S. Floyd	Reference:	Interpolated from "Concept Site Plan - 1" by Acorn dated 2/7/20
Summit Staff:	M. Hardison, P.E.	Date started: 3/9/2020	Date Completed: 3/9/2020

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	24" SS
Model:	AMS Power Probe	Diameter:	2"OD/1.5"ID
Method:	3" Casing	Hammer:	140 lb
Hammer Style:	Auto	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
3/9/2020	None		None Encountered

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	S-1	24/18	0 to 2	1		13" Dark brown to black SILT, little fine Sand,		TOPSOIL
1				1		frequent wood pieces and leaf matter, rootlets, ML		
				3		Gray brown fine to medium SAND, little to some Silt,		
2				3		loose, heavily mottled, moist, SP-SM		GLACIAL TILL
	S-2	24/24	2 to 4	6		Similar to above, fine to coarse SAND, little to trace		
3				5		Gravel, SP		
				8				
4				10				
	S-3	24/20	4 to 6	15		Similar to above, light brown to dark brown Silty fine		
5				18		to medium SAND, wet seam at 4.5', weathered		
				27		rock fragments starting at 5.2', heavily mottled		
6				50/2"				WEATHERED
								BEDROCK
7						End of Boring at 6.5', Refusal on Probable Bedrock		BEDROCK
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
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
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

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 PROBE LOG

Boring #: **P-1**

Project:	Residence Inn	Project #:	20051
Location:	1060 Westbrook Street	Sheet:	1 of 1
City, State:	Portland, Maine	Chkd by:	MH

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	78.0 ft. +/-
Driller:	S. Floyd	Reference:	Interpolated from "Concept Site Plan - 1" by Acorn dated 2/7/20
Summit Staff:	M. Hardison, P.E.	Date started: 3/9/2020	Date Completed: 3/9/2020

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	N/A
Model:	AMS Power Probe	Diameter:	N/A
Method:	Speartip	Hammer:	N/A
Hammer Style:	Auto	Method:	N/A

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
3/9/2020	None		None Encountered

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
1				PROBE				
2								
3						End of Probe at 1.8', Refusal on Probable Bedrock		BEDROCK
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								

Granular Soils		Cohesive Soils	
Blows/ft.	Density	Blows/ft.	Consistency
0-4	V. Loose	<2	V. soft
5-10	Loose	2-4	Soft
11-30	Compact	5-8	Firm
31-50	Dense	9-15	Stiff
>50	V. Dense	16-30	V. Stiff
		>30	Hard

% Composition ASTM D2487

< 5% Trace
5-15% Little
15-30% Some
> 30% With

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

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 PROBE LOG

Boring #: **P-2**

Project:	Residence Inn	Project #:	20051
Location:	1060 Westbrook Street	Sheet:	1 of 1
City, State:	Portland, Maine	Chkd by:	MH

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	75.0 ft. +/-
Driller:	S. Floyd	Reference:	Interpolated from "Concept Site Plan - 1" by Acorn dated 2/7/20
Summit Staff:	M. Hardison, P.E.	Date started: 3/9/2020	Date Completed: 3/9/2020

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	N/A
Model:	AMS Power Probe	Diameter:	N/A
Method:	Speartip	Hammer:	N/A
Hammer Style:	Auto	Method:	N/A

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
3/9/2020	None		None Encountered

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
				PROBE				
1				↓				
2						End of Probe at 1.3', Refusal on Probable Bedrock		BEDROCK
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								

Granular Soils		Cohesive Soils	
Blows/ft.	Density	Blows/ft.	Consistency
0-4	V. Loose	<2	V. soft
5-10	Loose	2-4	Soft
11-30	Compact	5-8	Firm
31-50	Dense	9-15	Stiff
>50	V. Dense	16-30	V. Stiff
		>30	Hard

% Composition ASTM D2487
< 5% Trace
5-15% Little
15-30% Some
> 30% With

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

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 PROBE LOG

Boring #: **P-3**

Project:	Residence Inn	Project #:	20051
Location:	1060 Westbrook Street	Sheet:	1 of 1
City, State:	Portland, Maine	Chkd by:	MH

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	83.0 ft. +/-
Driller:	S. Floyd	Reference:	Interpolated from "Concept Site Plan - 1" by Acorn dated 2/7/20
Summit Staff:	M. Hardison, P.E.	Date started: 3/9/2020	Date Completed: 3/9/2020

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	N/A
Model:	AMS Power Probe	Diameter:	N/A
Method:	Speartip	Hammer:	N/A
Hammer Style:	Auto	Method:	N/A

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
3/9/2020	None		None Encountered

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
				PROBE				
1				↓				
2						End of Probe at 1.2', Refusal on Probable Bedrock		BEDROCK
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								

Granular Soils		Cohesive Soils	
Blows/ft.	Density	Blows/ft.	Consistency
0-4	V. Loose	<2	V. soft
5-10	Loose	2-4	Soft
11-30	Compact	5-8	Firm
31-50	Dense	9-15	Stiff
>50	V. Dense	16-30	V. Stiff
		>30	Hard

% Composition ASTM D2487
< 5% Trace
5-15% Little
15-30% Some
> 30% With

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
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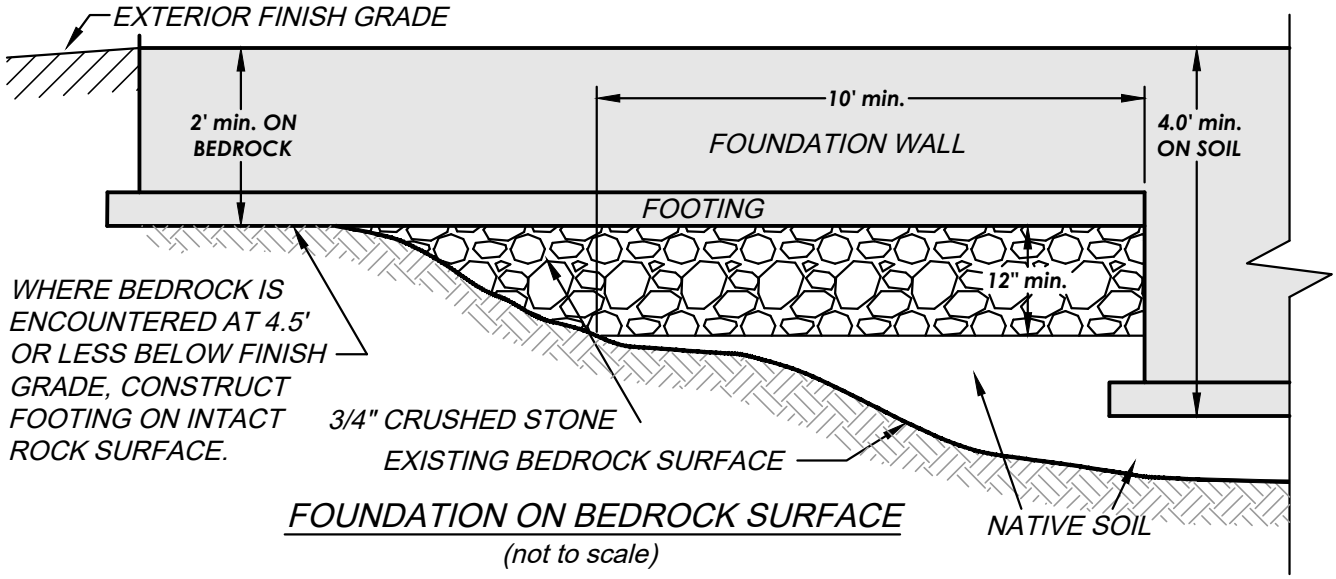
Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

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%

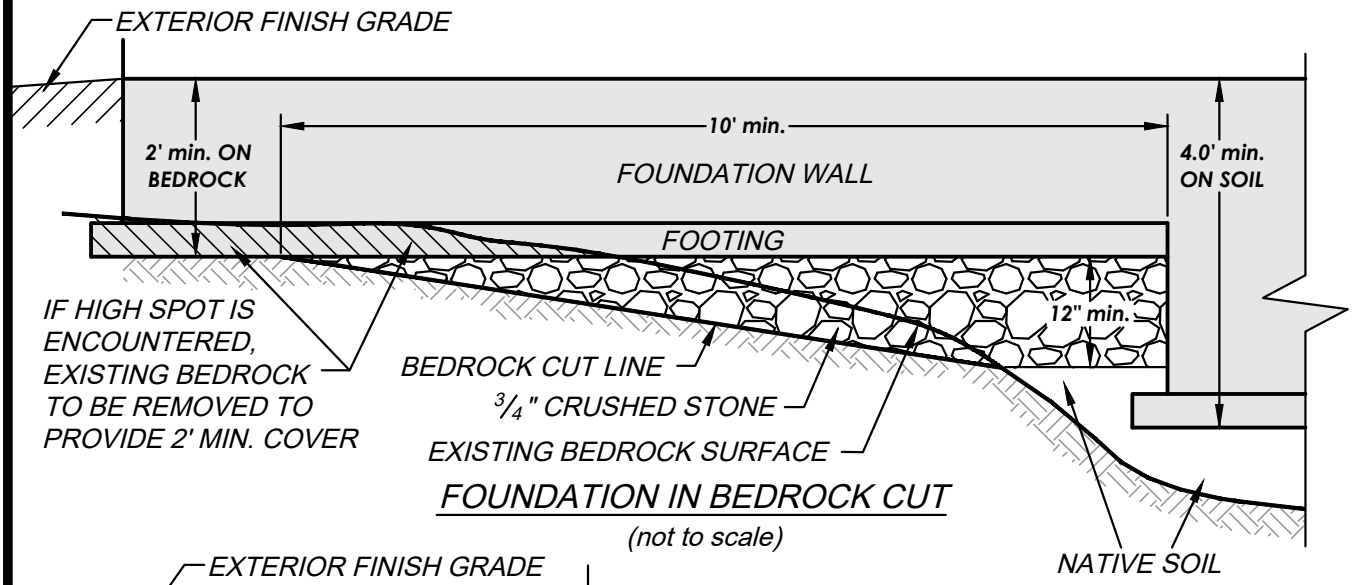
APPENDIX C

FOOTING TRANSITION DETAIL



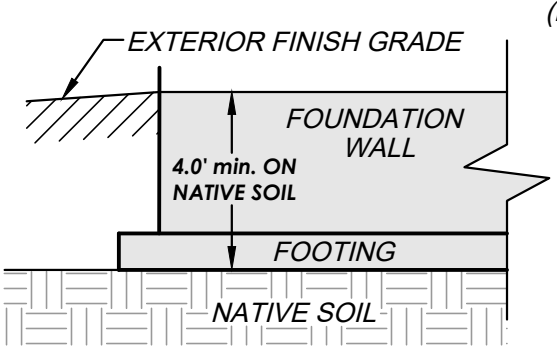
FOUNDATION ON BEDROCK SURFACE

(not to scale)



FOUNDATION IN BEDROCK CUT

(not to scale)



FOOTING - NO BEDROCK

(not to scale)

FOOTING TRANSITION DETAIL
RESIDENTIAL INN, JETPORT

1060 WESTBROOK STREET - PORTLAND, ME

PREPARED FOR

GIRI HOTEL MANAGEMENT

DATE: 11-13-2023	DRAWN BY: KRF	CHECKED BY: CWC
JOB: 20051.1	NOT TO SCALE	FILE: 20051 FTG TRANS

OFFICE: 210 MAINE AVENUE
FARMINGDALE, MAINE
TEL: (207) 588-7579

MAIL: P.O. BOX 515
GARDINER, ME 04345

SUMMIT
GEOENGINEERING SERVICES
www.summitgeoeng.com

Memorandum

Date: February 24, 2020

To: Peter Heil, P.E., CPESC, Acorn Engineering

CC: William Savage (Acorn), Richard Jordan (Flycatcher)

From: David Brenneman, Flycatcher, LLC

Subject: 1080 Westbrook Street, Portland Maine – Natural Resources Delineations

Dear Pete,

At the request of Acorn Engineering, on February 4, 2020 a wetland scientist and environmental technician from Flycatcher, LLC (Flycatcher) completed a preliminary wetland, stream and potential vernal pool survey on an approximately 4.5-acre area adjacent to the Portland International Jetport (Jetport). The area investigated included portions of lots 207-A012 and 210 A-B007, located at 1080 Westbrook Street in the City of Portland ("Survey Area", see attached drawing for a depiction).

Survey Area Description

The Survey Area is a mix of cleared and forested land showing various signs of historic development and disturbance. The understory of the forested area is dense with invasive shrubs and vines including tatarian honeysuckle (*Lonicera tatarica*), multiflora rose (*Rosa multiflora*), and oriental bittersweet (*Celastrus orbiculatus*). Adjacent land uses are associated with the Jetport and include a hotel, parking lots and hangars for the Jetport. Some residential development is located off Cobb Avenue to the north of the Survey Area. Other signs of historic impacts include fill piles, gravel roads, ditching, and an apparent stormwater detention basin.

Methods

Desktop Review

Prior to the site visit, I completed a brief desktop analysis of GIS based environmental data from the following sources:

- United States Geological Survey (USGS) topographic mapping;
- United States Fish and Wildlife Service (USFWS) national wetland inventory (NWI) mapping;
- Natural Resources Conservation Service (NRCS) medium-intensity soil survey mapping;
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs);
- USGS National Hydrography Dataset; and
- Recent and historic aerial photography.

Review of the data is helpful to target areas where potential resources may be present.

I also reviewed older wetland delineation data provided by Acorn from a prior survey. These data were used to guide my surveys while onsite.

Natural Resource Agency Outreach

This survey did not include outreach to natural resource agencies to ascertain information on known or potential locations of rare, threatened or endangered flora or fauna. If any new data is collected by Acorn prior to our spring site visits we will include that information in a follow-up addendum to this memo.

Wetlands

Wetland delineations were conducted in accordance with the US Army Corps of Engineers (USACE) Wetland Delineation Manual and the Northcentral and Northeast Regional Supplement (Version 2.0). The manual and supplement provide a repeatable methodology to identify potential wetland areas and are the accepted wetland delineation methodology of the Maine Department of Environmental Protection (MDEP) and the USACE.

The Survey Area was investigated by a team of two people meandering across the site. When a location appeared to have the requisite three factors that constitute a wetland (i.e., hydrophytic vegetation, indicators of hydrology, and the presence of hydric soils) an investigation was undertaken by the Wetland Scientist. The Wetland Scientist analyzed site-specific data to determine if the area met the criteria to be considered a wetland. When wetlands were identified, the boundaries of the wetlands were marked with glo-pink survey flagging emblazoned with the word "Wetland". Each flag was geo-located as described above.

Winter Delineation Limitations & Spring Review

This wetland delineation was conducted during a winter thaw while snow cover was reduced in most areas of southern Maine. During this delineation, unshaded areas were devoid of snowcover; however, portions of the forested areas had 4-8" of drifted snow that had not melted due to shading from the overstory. Standing water and saturated soils in the forest were frozen. Due to these conditions, I could not observe all vegetative strata or perform comprehensive soils review so was only able provide a preliminary winter delineation.

To locate the wetland boundary provided, I relied on topography, the composition of the tree and shrub strata, and evidence of hydrology. While these data support my delineation results, due to the conditions and lack of in-depth soils review, Flycatcher will perform a spring review of these data to verify the boundaries and make any adjustments necessary once we are allowed to view all of the site features. Based on the features we were able to observe, as well as my many years' experience conducting wetland delineations throughout Maine, I do not anticipate any significant changes to the wetland boundaries will occur based on the spring visit.

Stream Identification

Stream identification followed the Maine Natural Resources Protection Act (NRPA) definition of a "river, stream or brook" (Section 480-B). If a watercourse meeting the above definition was observed, blue survey flagging was hung along the centerline (for streams less than six feet in width) or along the top of the bank (for streams six feet or wider). The locations of each flag were geolocated as described below under "GPS Location".

Potential Vernal Pools

To identify potential vernal pool habitat, the definitions provided in Chapter 335 of the NRPA and the USACE Maine General Permit were used. Vernal pools are temporarily/seasonally flooded wetlands that provide the primary breeding habitat for vernal pool indicator species, and a host of secondary faunal species. Wood frogs (*Lithobates sylvaticus*), spotted salamanders (*Ambystoma maculatum*), blue spotted salamanders (*Ambystoma laterale*), and fairy shrimp (*Eubranchipus spp.*) are vernal pool indicator species that depend on vernal pools to complete their life cycle. Productivity of breeding vernal pool species is the primary metric used by regulatory authorities to assess vernal pool quality; thus, vernal pools must be assessed during the breeding season (generally mid-April to late-May). Since site review was completed in the winter, only potential vernal pool habitat (PVP) could be identified.

I relied primarily on topographic position and plant community to determine if an area was a potential vernal pool habitat as defined by the state or federal definitions. Due to winter conditions, I could not search potential pool basins for evidence of secondary faunal species.

Upland Drainages

Upland drainages (UDs) are hydrologic features that occur in uplands. Examples of UDs include roadside ditches, quick-draining surface swales, stormwater swales, and other areas that convey water, but which do not meet the definitions of wetland or stream. UDs are carefully investigated by our experienced wetland scientists to ensure their regulatory status. While not regulated, it is good diligence to locate these features since knowing their locations can help inform stormwater, civil engineering and erosion/sedimentation control design.

GPS Location

All features (e.g., wetland boundaries) located during the site visit were geolocated using a mapping grade global positioning system ("GPS") unit (Juniper Systems' Geode GPS Antenna and ESRI's ArcGIS Collector software). The data were collected using real-time correction and standards specified by the manufacturer to achieve sub-meter accuracy. The data was exported to ESRI shapefile and CAD drawing file format and provided to you via email on February 20, 2020. These data can be used during your initial design when planning avoidance and minimization of impacts to natural resources.

Results

Flycatcher's scientist identified three wetlands, one manmade PVP and one UD. No streams were identified.

The location of resources observed within the Survey Area are shown on Attachment 1. Summary descriptions are provided in Tables 1 and 2 below. Photos of the site are provided in Attachment 2.

Table 1. Wetland Description and data

Resource ID	Notes/Description	Covertype[1]	Dominant Plants	Hydrology Indicators	Hydric Soil Indicator
Wetland 1	• Isolated wetland with potential vernal pool habitat • Evidence of drainage patterns and water-stained leaves in melted pockets of snow	Freshwater Forested (PFO1E)	Red maple (Acer rubrum), Green ash (*Fraxinus pennsylvanica*), Tatarian honeysuckle, Glossy buckthorn (*Frangula alnus*), Multiflora rose	Surface water (A1), Water-stained leaves (B9), Drainage patterns (B10), Saturation visible on aerial imagery (C9), Geomorphic position (D2)	Presumed based on surface evidence – frozen conditions; Will review during spring conditions.
Wetland 2	• Constructed stormwater basin • Naturalized and overgrown with emergent vegetation and wetland shrubs • Culvert and riprap overflow observed in northeast corner of basin	Freshwater Shrub/Emergent (PSS1F/PEM1F)	Pussy willow (*Salix discolor*), Speckled alder (*Alnus incana*), broadleaf cattail (*Typha latifolia*)	Surface water (A1), Inundation visible on aerial imagery (B7)	Presumed based on surface evidence – frozen conditions; presume not a regulated wetland.
Wetland 3	• Small pit and mound area with drainage patterns • Evidence of ponding and erosion on downslope side of wetland	Freshwater Forested (PFO1E)	Red maple (Acer rubrum), Green ash (*Fraxinus pennsylvanica*), Tatarian honeysuckle, Glossy buckthorn (*Frangula alnus*), Multiflora rose	Surface water (A1), Water-stained leaves (B9), Drainage patterns (B10), Microtopographic relief (D4)	Presumed based on surface evidence – frozen conditions Will review during spring conditions.

Table 2. Vernal pool habitat descriptions

Resource ID	Notes/Description	Pool Origin	Dominant vegetation	Hydroperiod
PVP 1	• Manmade, isolated pool in Wetland 1 • Impounded by berm on downslope (east side) of pool • Observed narrow eroded channel draining from PVP 1 to Wetland 2	Manmade – impounded by berm	Tatarian honeysuckle, winterberry (*Ilex verticillata*), American elm (*Ulmus americana*)	Semi-Permanent. Will review during spring conditions.

[1] Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31, Washington, D.C.

Permitting Discussion

Wetland 1

Wetland 1 is small and located in a low area where runoff collects in an impounded basin, recharging groundwater. Due to periodic flooding, the resource may provide habitat for vernal pool indicators species and other wetland dependent fauna. The PVP identified in Wetland 1 is manmade, so regardless of biological productivity it would not qualify as an MDEP Significant Vernal Pool and would therefore not be state-regulated. Depending on pool productivity, if a project were to occur on this site which triggered federal permitting jurisdiction (e.g., a General Permit), the USACE may require consultation and/or special permitting considerations for this feature. If the PVP is not productive, which is likely due to the lack of surrounding habitat, the USACE will generally not require special protections.

If a spring reconnaissance survey is conducted to verify wetland boundaries (as described above) we recommend performing a simultaneous survey of the PVP to ascertain productivity. This survey could take place in late March/early April.

Wetland 2

Wetland 2 is located in a basin and was flooded, but frozen at the time of survey. The flooding is evidence of hydrology, but limited the review of soils, which are presumably hydric due to the flooding. This basin has large berms on the north and east sides and there is a stormwater outlet constructed through one of the berms supporting the assumption that the basin was constructed as a structural stormwater BMP. The USACE does not generally take jurisdiction over isolated features created in uplands, and the MDEP has historically not required permitting for impacts to features created for stormwater control (assuming stormwater standards under Chapter 500 can be met). Flycatcher recommends presentation of any supporting information regarding the origin/design of Wetland 2 during pre-application or scoping meetings to verify the status as a non-jurisdictional feature.

Wetland 3

Wetland 3 is located in a flat area upslope of Wetland 1 and 2. There were berms observed along the wetland boundaries to the north and east and other evidence of past site disturbance in the wetland. As discussed above, the wetland boundaries will be verified in the spring, but Flycatcher does not anticipate further permitting considerations specific to this resource.

Thank you for the opportunity to assist you. I will revisit the site as early as practical following snow melt to review wetland boundaries and assess breeding vernal pool indicator species in PVP 1.

If you have any questions regarding the results provided in this report, please do not hesitate to contact me.

Sincerely,



David Brenneman, Senior Project Lead
Dave@flycatcherllc.com
(207) 751-3053

Attachment (2)

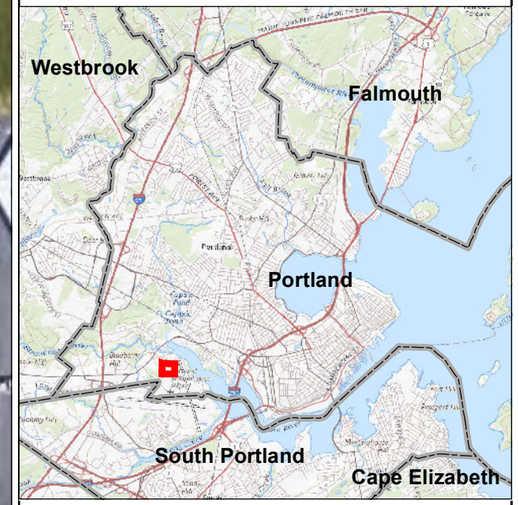
ATTACHMENT 1

Natural Resources Map



LEGEND

- SURVEY AREA
- CULVERT
- UPLAND DRAINAGE DELINEATION
- BOUNDARY LINE DELINEATED
- WETLAND POTENTIAL VERNAL
- POOL



NOTES:

1 BASEMAP IMAGERY FROM ESRI/NAIP, "WORLD IMAGERY" WEB BASEMAP SERVICE LAYER, 2019.

2 RESOURCES WERE DELINEATED BY FLYCATCHER ON 2/4/2020.

0 100 200
Feet
1 " = 83 '
1:1,000

PROJECT:
ACORN ENGINEERING
1080 WESTBROOK ROAD
PORTLAND, CUMBERLAND COUNTY, MAINE

TITLE:
DELINEATED RESOURCES MAP

DRAWN BY:	D. KENWORTHY	PROJ NO.:	ACORN_20E
CHECKED BY:	D. BRENNEMAN		
MONTH:	FEBRUARY		**FIGURE 1**
YEAR:	2020		

Flycatcher
LAND + SCIENCE + PEOPLE

FILE NO.: Acorn_1080Westbrook_Fig1_DelinResources_11x17L.mxd

Coordinate System: NAD 1983 StatePlane Maine West FIPS 1802 Feet (Foot US)
Map Rotation: 0

Plot Date: 2/16/2020, 09:14:25 AM by JAKEN -- LAYOUT: ANSI B(11"x17")
Path: D:\Flycatcher\Projects\Acorn\Acorn_1080Westbrook_Fig1_DelinResources_11x17L.mxd

ATTACHMENT 2

Photographs from Site Visit



Looking northeast at Wetland 1, February 4, 2020



Looking north across potential vernal pool within Wetland 1, February 4, 2020



Looing northeast across stormwater basin (Wetland 2), February 4, 2020



Looking east across Wetland 3, February 4, 2020

ACORN ENGINEERING, INC.

Chief Gautreau
City of Portland Fire Department
380 Congress St.
Portland, ME 04101

February 23, 2024

Subject: 1060 Westbrook Street – Fire Department Checklist
Section L of Application

On behalf of Giri Hotel Management, the design team is pleased to respond to the Portland Fire Department Site Review Checklist.

1. Name, address, telephone number of applicant:

   Giri Hotel Management
   225 W Squantum Street, Suite 202
   Quincy, MA 02171
   (508)-345-3305

2. Name address, telephone number of architect:

   Mussachio Architects
   30 North Forest Road
   Williamsville, New York 14221
   (716) 631-9949 EXT. 106

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

   NFPA: Hotel / IBC: R-1

4. Square footage of all structures, including decks [total and per story]

Proposed Building		
1st Floor	19,889	**SF**
2nd Floor	19,889	**SF**
3rd Floor	19,889	**SF**
Total	Approx. 59,667	**GFA**

5. Elevation of all structures
   The proposed 3-story structure's height will be below the allowable 45 feet within the A-B zoning district. Please refer to the building elevations provided by the Architect for additional information.

6. Proposed fire protection of all structures

   The building will have a sprinkler system per code. Fire flows and requirements for system storage or booster pumping are subject to the fire designer which will be performed prior to the request for a building permit.

7. Hydrant locations

   a. An existing hydrant is located east of the proposed building on Westbrook Street. Additionally, this project proposes to install a new hydrant within the new parking area. Hydrant flow data from the Portland Water District once received may be made available to the Fire Department upon request.

8. Water main size and location

   The proposed Hotel building will be serviced by a proposed 2" water service connection as well as a 6" fire suppression service from the existing 12" cast iron water main within Jetport Boulevard.

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

   Access to the structure is provided from a new curb cut on Westbrook Street two sides of the building can be accessed from the proposed parking lot.

NFPA 1 – Chapter 18 Fire Department Access and Water Supply

18.2 Fire Department Access:

The following pavement street width is currently available:

- Westbrook Street: 40 feet
- Jetport Boulevard: 32 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: The internal parking lot is designed for vehicular circulation.

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: Access to the structure is provided directly from the parking lot on the east and south sides of the building.

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 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 Westbrook 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.

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

Response: Elevators will be sized to accommodate an 80 x 24-inch stretcher.

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 site's address is 1060 Westbrook Street in Portland Maine.

Thank you for your review. Please let me know if you have any additional questions or comments.
Sincerely,

Peter Heil, P.E.
Project Manager
Acorn Engineering, Inc.

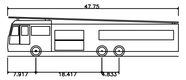
GENERAL NOTES:

1. ALL 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.

SPACE AND BULK STANDARDS		
ZONE: A–B	REQUIRED	PROPOSED
MIN. LOT AREA	20,000 SF	175,560 SF
MIN. LOT WIDTH	50 FT	
MIN. STREET FRONTAGE	50 FT	813 FT
STRUCTURE SETBACKS		
FRONT (ALONG WESTBROOK STREET ONLY)	20 FT	132.30 FT
SIDE	NONE	N/A
REAR	NONE	N/A
MAXIMUM HEIGHT	45 FT*	37.5'
MAXIMUM IMPERVIOUS SURFACE RATIO	70%	39%
MINIMUM OFF–STREET PARKING	1 SPACE PER 4 ROOMS W/ 120 ROOMS = 30 SPACES	106

SPACE AND BULK NOTES:
* PER FFA BUILDING ELEVATION IS RESTRICTED TO 52 FT ABOVE GROUND LEVEL & 126 FT ABOVE THE MEAN SEA LEVEL

PARKING SUMMARY	
	# PARKING SPACES
STANDARD (9'X18')	101
ADA (8'X18')	5
TOTAL PROPOSED SPACES	106



F–ONE HP95 Mid Mount

Overall Length	47.750ft
Overall Width	8.433ft
Overall Body Height	11.000ft
Min Body Ground Clearance	1.333ft
Track Width	8.233ft
Lock–to–lock time	6.00s
Max Wheel Angle	45.00°

N/F
PINGREE 2000 REAL ESTATE HOLDINGS, LLC
28382/86
204–A–10, 210–B–39
1128 WESTBROOK STREET

EX. PROPERTY LINE, TYP.
EX. DETENTION POND, ICE COVERED AT TIME OF SURVEY
EX. UTILITY POLE TO REMAIN, TYP. (OF 7)
WESTBROOK STREET
100.00'
20.00'
VUSF 1
30' DRAINAGE EASEMENT
EX. TREE LINE, TYP.
PR. TREE LINE, TYP.
LIMITS OF ICE AT TIME OF SURVEY, TYP.
PR. VERTICAL GRANITE CURB PER DETAIL, TYP.
20' STRUCTURE SETBACK ON WESTBROOK STREET
EX. SIGN TO REMAIN, TYP. (OF 4)
EX. LIMITS OF RIPRAP, TYP.
EX. CONCRETE ISLAND AND "AUTHORIZED VEHICLES ONLY" SIGNAGE TO REMAIN
24 SPACES
PR. PAVEMENT, TYP.
24.00'
PR. LANDSCAPED ISLAND MOUNDED TO DRAIN, TYP.
9 SPACES
32 SPACES
6 SPACES
BUILDING LIMITS PER FFA
21.00'
11.00'
30.00'
8.00'
8.00'
5.00'
18.00' TYP.
9.00' TYP.
11 SPACES
ADA EV CHARGING PARKING SPACE
PR. WOODEN FENCE PER DETAIL, TYP.
12.00'
5.00'
5.00' TYP.
HOLD 6" FOUNDATION REVEAL ON PERIMETER OF BUILDING. COORDINATE WITH ARCHITECT AND STRUCTURAL ENGINEER
PR. 167 LF CONCRETE RETAINING WALL WITH RAILING, TYP. TO BE DESIGNED BY OTHERS. (5'± TALL)
PR. HOTEL BUILDING 19,889 SF FOOTPRINT
24 SPACES
PR. STOP SIGN PER DETAIL, TYP. (OF 4) TO CREATE 4–WAY STOP INTERSECTION
WESTBROOK STREET
EX. EDGE OF PAVEMENT, TYP.
APPROXIMATE LOCATION OF EMBASSY SUITES ENTRANCE DRIVE
EX. VERTICAL GRANITE CURB, TYP.
EX. SIGN TO BE RELOCATED
VUSF 2
PR. PAVER WALKWAY, TYP. PER DETAIL
PR. OUTDOOR SEATING AREA
18" GRAVEL DRIP EDGE, TYP. PER DETAIL
PR. LANDSCAPED AREA TO BE DESIGNED BY OTHERS, TYP.
PR. 24'X13' DUMPSTER AREA, PER DETAIL
EX. FENCE TO REMAIN, TYP.
EX. GUARDRAIL TO REMAIN, TYP.
JETPORT BOULEVARD

N/F
TOYE REALTY HOLDINGS II, LLC
15976/327
210A–B–4
0 JETPORT BOULEVARD

30 0 30 60
SCALE: 1:30

PERMITING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
ATS LETTER	PFH 1/26/2024
CSS	PFH 2/9/2024

SITE PLAN

DRAWING NAME:
PROJECT NAME: HYATT STUDIOS JETPORT
1060 WESTBROOK STREET, PORTLAND, ME 04102
CLIENT: GIRI HOTEL MANAGEMENT
225 WEST SQUANTUM STREET, SUITE 200, QUINCY, MA 02171

ACORN ENGINEERING, INC.

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY UNAUTHORIZED MODIFICATIONS OR REUSE OF THESE PLANS WILL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
70 FORE RIVER PARKWAY, SUITE 104
PO BOX 3474 PORTLAND, ME 04104
(207) 775–2655

FILE:	1133_CIVIL
JN:	1133
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

DRAWING NO.
C-10

Project		Catalog #		Type	
Prepared by		Notes		Date	



McGraw-Edison

GALN Galleon II

Area / Site Luminaire

Product Features

Light ARchitect™

BAA BUY AMERICAN ACT COMPLIANT OPTIONS AVAILABLE

Product Certifications

ISO SYSTEMS CERTIFIED

DLC LISTED [1]

DLC LISTED PREMIUM [1]

3G VIB

IP66

UL CERTIFIED

ida DARK SKY APPROVED [2]

5 YEAR LIMITED WARRANTY

Interactive Menu

- Ordering Information page 2
- Mounting Details page 3
- Optical Distributions page 5
- Product Specifications page 5
- Energy and Performance Data page 6
- Control Options page 11

Quick Facts

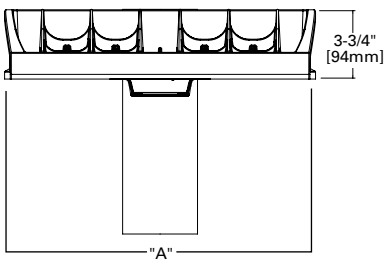
- Lumen packages range from 3,300 - 73,500 (33W - 552W)
- 17 optical distributions
- Efficacy up to 159 lumens per watt

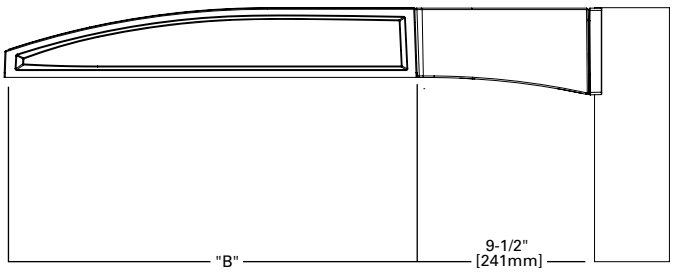
Connected Systems

- WaveLinx Lite
- WaveLinx

Dimensional Details

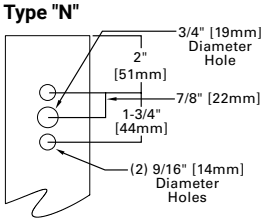
Standard Pole Mount Arm





Pole Drilling Pattern

Type "N"



Number of Light Squares	Width "A"	Housing Length "B"	Weight with Standard or QM Arm	EPA with Standard or QM Arm
1-4	16"	22"	29 lb	0.95
5-6	22"	22"	39 lb	0.95
7-9	22"	28-1/8"	48 lb	1.1

NOTES:
For arm selection requirements and additional line art, see Mounting Details section.

NOTES:
1. Visit https://www.designlights.org/search/ to confirm qualification. Not all product variations are DLC qualified.
2. IDA Certified (3000K CCT and warmer only, fixed mounting options)

Ordering Information

SAMPLE NUMBER: **GALN-SA4C-740-U-T4FT-GM**

Product Family [1, 2]	Light Engine		Color Temperature	Voltage	Distribution	Mounting	Finish
	Configuration	Drive Current					
GALN=Galleon II **BAA-GALN**=Galleon II Buy American Act Compliant [27] **TAA-GALN**=Galleon II Trade Agreements Act Compliant [27]	**SA1**=1 Square **SA2**=2 Squares **SA3**=3 Squares **SA4**=4 Squares **SA5**=5 Squares **SA6**=6 Squares **SA7**=7 Squares **SA8**=8 Squares **SA9**=9 Squares	**A**=600mA **B**=800mA **C**=1000mA **D**=1200mA [4, 17] **Z**=Configured [33]	**722**=70CRI, 2200K **727**=70CRI, 2700K **730**=70CRI, 3000K **735**=70CRI, 3500K **740**=70CRI, 4000K **750**=70CRI, 5000K **760**=70CRI, 6000K **827**=80CRI, 2700K **830**=80CRI, 3000K **835**=80CRI, 3500K **840**=80CRI, 4000K **930**=90CRI, 3000K **935**=90CRI, 3500K **940**=90CRI, 4000K **950**=90CRI, 5000K **AMB**=Amber, 590nm [15, 17]	**U**=120-277V **H**=347V-480V [7, 30] **1**=120V **2**=208V **3**=240V **4**=277V **8**=480V [7, 30] **9**=347V [7] **DV**=277V-480V DuraVolt Drivers [29, 30, 31]	**T1**=Type I **T2**=Type II **T2R**=Type II Roadway **T3**=Type III **T3R**=Type III Roadway **T4FT**=Type IV Forward Throw **T4W**=Type IV Wide **5NQ**=Type V Narrow **5MQ**=Type V Square Medium **5WQ**=Type V Square Wide **SL2**=Type II w/Spill Control **SL3**=Type III w/Spill Control **SL4**=Type IV w/Spill Control **SLL**=90° Spill Light Eliminator Left **SLR**=90° Spill Light Eliminator Right **RW**=Rectangular Wide Type I **AFL**=Automotive Frontline	**[Blank]**=Standard Pole Mount Arm **QU**=Quick Mount Universal Arm **QM**=Pole Mount Arm with Quick Mount Adaptor **PA**=Pole Mount, Adjustable **SP**=3" Slipfitter, Adjustable [8] **SP2**=2-3/8" Slipfitter, Adjustable [8] **QMA**=Quick Mount Mast Arm, Fixed **MA**=Mast Arm, Fixed **WM**=Wall Mount, Fixed **WA**=Wall Mount, Adjustable **UP**=Upswept Arm	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White **RALXX**=Custom Color

Options (Add as Suffix)	Controls and Systems Options (Add as Suffix)	Accessories (Order Separately) [28]
DIM=External 0-10V Dimming Leads [20] **F**=Single Fuse (120, 277 or 347V Specify Voltage) **FF**=Double Fuse (208, 240 or 480V Specify Voltage) **20K**=20kV UL 1449 fused surge protective device [10] **2L**=Two Circuits [10] **HA**=50°C High Ambient **HSS**=Installed House Side Shield [18] **GRSBK**=Glare Reducing Shield, Black [23] **GRSWH**=Glare Reducing Shield, White [23] **LCF**=Light Square Trim Painted to Match Housing [26] **TH**=Tool-less Door Hardware [5] **CC**=Coastal Construction finish [3] **L90**=Optics Rotated 90° Left **R90**=Optics Rotated 90° Right **AHD145**=After Hours Dim, 5 Hours [22] **AHD245**=After Hours Dim, 6 Hours [22] **AHD255**=After Hours Dim, 7 Hours [22] **AHD355**=After Hours Dim, 8 Hours [22] **DALI**=DALI Drivers	**BPC**=Button Type Photocontrol. Must specify voltage 120V, 208V, 240V or 277V. [6] **PR**=NEMA 3-PIN Photocontrol Receptacle **PR7**=NEMA 7-PIN Photocontrol Receptacle [21] **FADC**=Field Adjustable Dimming Controller [32] **PSC**=Photocontrol Shorting Cap **SPB2**=Dimming Motion Sensor, 9'-20' mounting [24] **SPB4**=Dimming Motion Sensor, 21'-40' mounting [24] **SPB2/X**=Dimming Motion Sensor, limited square count, 9'-20' mounting [24] **SPB4/X**=Dimming Motion Sensor, limited square count, 21'-40' mounting [24] **MS/DIM-L20**=Motion Sensor for Dimming Operation, 9'-20' Mounting [34] **MS/DIM-L40**=Motion Sensor for Dimming Operation, 21'-40' Mounting [34] **ZW**=WaveLinx-enabled 4-PIN Twistlock Receptacle [19] **ZD**=SR Driver-enabled 4-PIN Twistlock Receptacle [19] **ZW-WOBXX**=WaveLinx Lite, Dimming Motion and Daylight, Bluetooth Programmable, 7' - 15' Mounting [19, 12] **ZW-WOFXX**=WaveLinx Lite, Dimming Motion and Daylight, Bluetooth Programmable, 15' - 40' Mounting [19, 12] **ZD-WOBXX**=WaveLinx Lite, SR Driver, Dimming Motion and Daylight, Bluetooth Programmable, 7' - 15' Mounting [19, 12] **ZD-WOFXX**=WaveLinx Lite, SR Driver, Dimming Motion and Daylight, Bluetooth Programmable, 15' - 40' Mounting [19, 12] **ZW-SWPD4XX**=WaveLinx Pro, Dimming Motion and Daylight, WAC Programmable, 7' - 15' Mounting [19, 12, 13] **ZW-SWPD5XX**=WaveLinx Pro, Dimming Motion and Daylight, WAC Programmable, 15' - 40' Mounting [19, 12, 13] **ZD-SWPD4XX**=WaveLinx Pro, SR Driver, Dimming Motion and Daylight, WAC Programmable, 7' - 15' Mounting [19, 12, 13] **ZD-SWPD5XX**=WaveLinx Pro, SR Driver, Dimming Motion and Daylight, WAC Programmable, 15' - 40' Mounting [19, 12, 13] **DIM10-L20**=Synapse Occupancy Sensor (9'-20' Mounting) [19] **DIM10-L40**=Synapse Occupancy Sensor (21'-40' Mounting) [19]	**OA/RA1016**=NEMA Photocontrol Multi-Tap - 105-285V **OA/RA1027**=NEMA Photocontrol - 480V **OA/RA1201**=NEMA Photocontrol - 347V **OA/RA1013**=Photocontrol Shorting Cap **OA/RA1014**=120V Photocontrol **MA1252**=10kV Surge Module Replacement **MA1036-XX**=Single Tenon Adapter for 2-3/8" O.D. Tenon **MA1037-XX**=2@180° Tenon Adapter for 2-3/8" O.D. Tenon **MA1197-XX**=3@120° Tenon Adapter for 2-3/8" O.D. Tenon **MA1188-XX**=4@90° Tenon Adapter for 2-3/8" O.D. Tenon **MA1189-XX**=2@90° Tenon Adapter for 2-3/8" O.D. Tenon **MA1190-XX**=3@90° Tenon Adapter for 2-3/8" O.D. Tenon **MA1191-XX**=2@120° Tenon Adapter for 2-3/8" O.D. Tenon **MA1038-XX**=Single Tenon Adapter for 3-1/2" O.D. Tenon **MA1039-XX**=2@180° Tenon Adapter for 3-1/2" O.D. Tenon **MA1192-XX**=3@120° Tenon Adapter for 3-1/2" O.D. Tenon **MA1193-XX**=4@90° Tenon Adapter for 3-1/2" O.D. Tenon **MA1194-XX**=2@90° Tenon Adapter for 3-1/2" O.D. Tenon **MA1195-XX**=3@90° Tenon Adapter for 3-1/2" O.D. Tenon **SRA238**=Adapter kit for mounting 3" SP arm to 2-3/8" O.D. vertical tenon **FSIR-100**=Wireless Configuration Tool for MS/DIM [34] **LS/HSS**=Field Installed House Side Shield [9, 18] **LS/GRSBK-2PK** =Glare Reducing Shield, Black [9, 23] **LS/GRSWH-2PK** =Glare Reducing Shield, White [9, 23] **LS/PFS**=Perimeter Shield, Black [16] **WOLC-7P-10A**=WaveLinx Outdoor Control Module [11, 19] **WOB-XX**=WaveLinx Lite Sensor, Dimming Motion and Daylight, Bluetooth Programmable, 7' - 15' Mounting [12, 14, 19] **WOF-XX**=WaveLinx Lite Sensor, Dimming Motion and Daylight, Bluetooth Programmable, 15' - 40' Mounting [12, 14, 19] **SWPD4-XX**=WaveLinx Sensor, Dimming Motion and Daylight, WAC Programmable, 7' - 15' Mounting [12, 13, 14, 19] **SWPD5-XX**=WaveLinx Sensor, Dimming Motion and Daylight, WAC Programmable, 15' - 40' Mounting [12, 13, 14, 19]

NOTES:

1. Customer is responsible for engineering analysis to confirm pole and fixture compatibility for all applications. Refer to our white paper WP513001EN for additional support information.
2. DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.
3. Coastal construction finish salt spray tested to over 5,000-hours per ASTM B117, with a scribe rating of 9 per ASTM D1654. Not available with TH option.
4. Drive current 1200mA not available with color temperatures 722, 727, 827, 830 or 930 when the HSS option is selected.
5. TH option not 3G rated. Not available with Coastal Construction (CC) option.
6. Not available with voltage options H, 8 or 9.
7. Requires the use of an internal step down transformer when combined with sensor options. Not available in combination with the HA high ambient and sensor options at 1A.
8. SP arm limited to 3" O.D. vertical tenon. SP2 limited to 2-3/8" O.D. vertical tenon.
9. One required for each Light Square.
10. 2L is not available with SPB at 347V or 480V. Not available with WaveLinx or Enlighted sensors, or 20kV surge option.
11. Requires PR7.
12. Replace XX with sensor color (WH, BZ or BK.)
13. WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed. WAC not required for LC Bluetooth sensors.
14. Requires ZW or ZD receptacle.
15. Narrow-band 590nm +/- 5nm for wildlife and observatory use. Choose drive current A; supplied at 500mA drive current only. Exact luminaire wattage available in IES files. Available with 5WQ, 5MQ, SL2, SL3 and SL4 distributions. Can be used with HSS option.
16. Set of 4 pcs. One set required per Light Square.
17. Not available with HA option.
18. Not for use with T1, 5NQ, 5MQ, 5WQ or RW optics.
19. Cannot be used with other control options.
20. Low voltage control lead brought out 18" outside fixture. Not available with DALI or integrated controls options
21. Not available if any SPB, LWR, or WaveLinx sensor is selected. Motion sensor has an integral photocell.
22. Requires the use of BPC photocontrol or the PR7 or PR photocontrol receptacle with photocontrol accessory.
23. Not for use with T1, T4FT, T4W or SL4 optics.
24. Sensor configuration mobile application required for configuration. See controls page for details.
25. Replace X with number of Light Squares controlled by the SPB, referencing the "SPB/X Availability Table" on the controls page.
26. Not available with HSS, GRSWH or GRSBK.
27. Only product configurations with these designated prefixes are built to be compliant with the Buy American Act of 1933 (BAA) or Trade Agreements Act of 1979 (TAA), respectively. Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.
28. For BAA or TAA requirements, Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.
29. DuraVolt drivers feature added protection from power quality issues such as loss of neutral, transients and voltage fluctuations. Visit www.signify.com/duravolt for more information.
30. 480V not to be used with ungrounded or impedance grounded systems.
31. Not available in 1 square configuration at 800mA or below. Not available with any control option except SPB.
32. Cannot be used with PR7 or other motion response control options.
33. Use GALN Product Configurator to specify lumen output, drive current and wattage. Not available with AMB.
34. Uses the FSP-211 motion sensor. The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative at Cooper Lighting Solutions for more information.

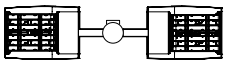
LumenSafe Integrated Network Security Camera Technology Options (Add as Suffix)

Product Family	Camera Type	Data Backhaul	
L=LumenSafe Technology	**D**=Standard Dome Camera **H**=Hi-Res Dome Camera **Z**=Remote PTZ Camera	**C**=Cellular, No SIM **A**=Cellular, AT&T **V**=Cellular, Verizon **S**=Cellular, Sprint	**R**=Cellular, Rogers **W**=Wi-Fi Networking w/ Omni-Directional Antenna **E**=Ethernet Networking

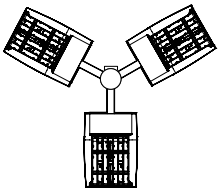
Mounting Details

Pole Configuration Options

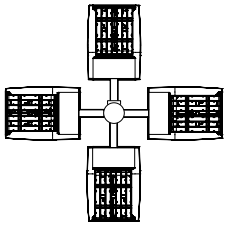
2 @ 180°



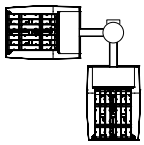
3 @ 120° (Round poles only)



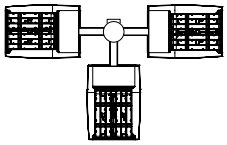
4 @ 90°



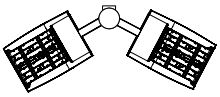
2 @ 90°



3 @ 90°

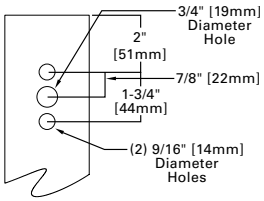


2 @ 120° (Round poles only)

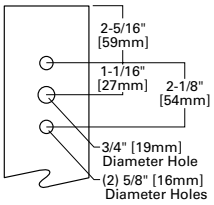


Pole Drilling Patterns

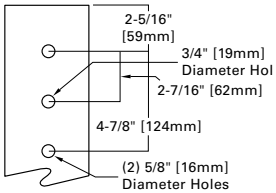
Type "N"



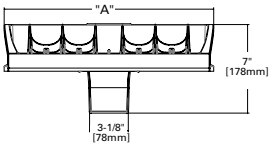
Type "R"

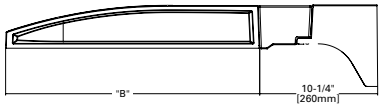


Type "M"



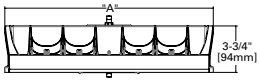
Quick Mount Universal Arm (QU)



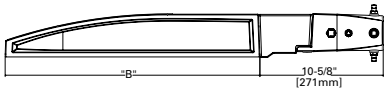


*NOTE: Universal bolt pattern compatible with Type N through Type M drilling patterns

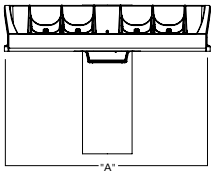
Quick Mount Mast Arm (QMA)

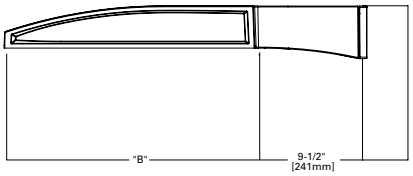


*NOTE: Fits 2-3/8" O.D. tenon



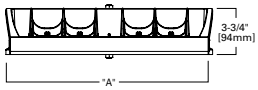
Pole Mount Arm with Quick Mount Adaptor (QM)



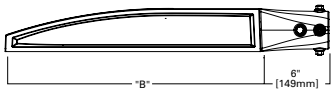


*NOTE: Use Type N drilling pattern

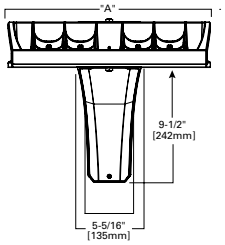
Mast Arm, Fixed (MA)

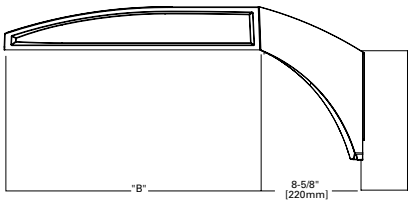


*NOTE: Fits 2-3/8" O.D. tenon



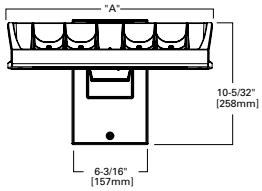
Upswept Arm (UP)

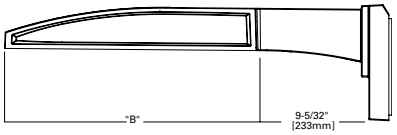




*NOTE: Universal bolt pattern compatible with Type N through Type M drilling patterns

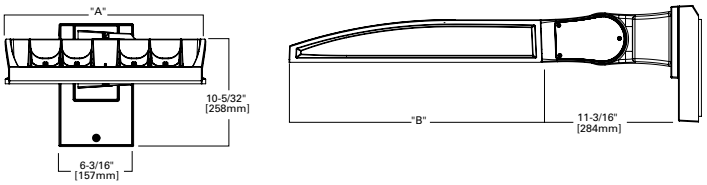
Wall Mount, Fixed (WM)



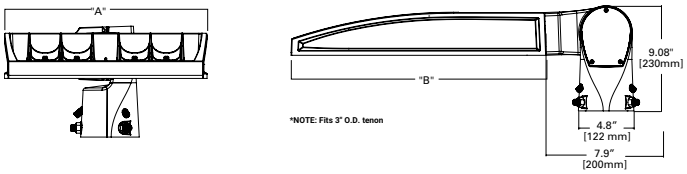


Mounting Details

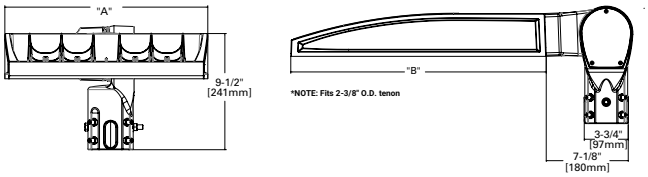
Wall Mount, Adjustable (WA)



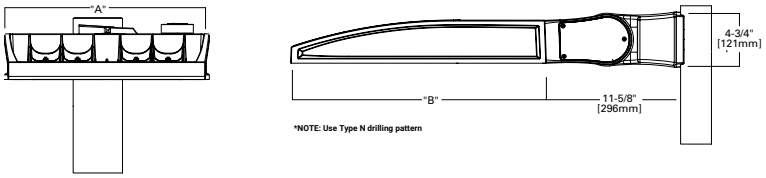
3" Slipfitter, Adjustable (SP)



2-3/8" Slipfitter, Adjustable (SP2)

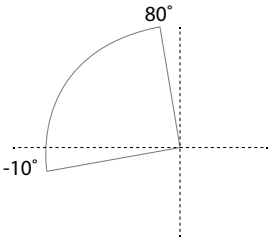


Pole Mount, Adjustable Arm (PA)



Adjustable Arm Range of Motion

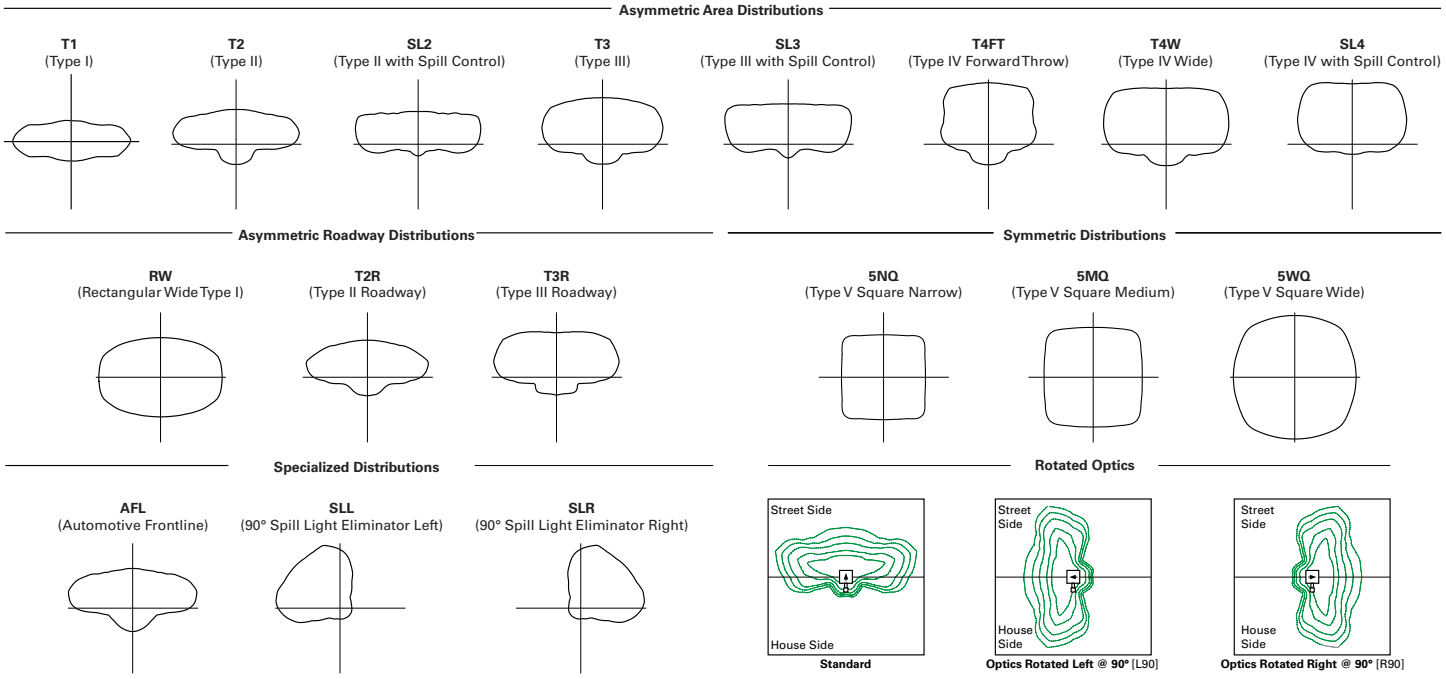
- Includes WA, SP, SP2 and PA mounting options
- Adjustable in increments of 5°
- Must maintain downward facing orientation



Fixture Weights and EPAs

Tilt Angle (Degrees)	Number of Light Squares	Weight	1 @ 90°	2 @ 180°	2 @ 90°	2 @ 120°	3 @ 90°	3 @ 120°	4 @ 90°
0°	1-4	33.5 lb (15.2 kg)	0.85	1.70	1.46	1.66	2.31	2.25	2.35
	5-6	43.5 lb (19.7 kg)	0.86	1.71	1.62	1.80	2.49	2.35	2.50
	7-9	52.5 lb (23.8 kg)	0.98	1.95	1.75	1.98	2.73	2.55	2.76
15°	1-4	33.5 lb (15.2 kg)	1.10	1.71	1.95	2.26	2.81	3.30	2.87
	5-6	43.5 lb (19.7 kg)	1.42	1.71	2.27	2.72	3.13	3.63	3.15
	7-9	52.5 lb (23.8 kg)	1.69	1.96	2.67	3.22	3.65	4.38	3.72
30°	1-4	33.5 lb (15.2 kg)	1.72	1.81	2.58	3.21	3.44	4.59	3.53
	5-6	43.5 lb (19.7 kg)	2.26	2.29	3.11	4.00	3.97	5.27	4.00
	7-9	52.5 lb (23.8 kg)	2.75	2.85	3.73	4.83	4.71	6.45	4.81
45°	1-4	33.5 lb (15.2 kg)	2.25	2.36	3.10	4.00	3.96	5.63	4.08
	5-6	43.5 lb (19.7 kg)	2.96	2.99	3.81	5.06	4.67	6.49	4.71
	7-9	52.5 lb (23.8 kg)	3.63	3.76	3.73	6.17	5.59	8.03	5.73
60°	1-4	33.5 lb (15.2 kg)	2.63	2.77	3.49	4.58	4.34	6.21	4.48
	5-6	43.5 lb (19.7 kg)	3.46	3.51	4.32	5.84	5.19	7.01	5.22
	7-9	52.5 lb (23.8 kg)	4.27	4.44	5.25	7.15	6.23	8.80	6.40

Optical Distributions



Product Specifications

Construction
- Die-cast aluminum housing and heat sink
- Three housing sizes, using 1 to 9 light squares

Optics
- High-efficiency injection-molded AccuLED Optics technology
- 17 optical distributions for area site and roadway applications
- 3 shielding options include HSS, GRS and PFS
- IDA Certified (3000K CCT and warmer only, fixed mounting options)

Electrical
- Removable power tray assembly includes drivers, surge modules and control modules for ease of maintenance and serviceability
- Standard with 0-10V dimming
- Standard with 10kV surge module, optional 20kV surge module
- Suitable for operation in -40°C to 40°C ambient environments. Optional 50°C high ambient (HA) configuration

Mounting
- Arms are factory installed, enabling closed-housing installation
- All arms suitable for round or square pole installation
- All arms provide clearance for multiple fixture installations at 90°

Finish
- 6 standard finishes use super durable TGIC polyester powder coat paint, providing 2.5 mil nominal thickness and salt-spray tested to 3,000 hours per ASTM B117
- RAL and custom color matches available
- Coastal Construction (CC) option salt-spray tested to 5,000 hours per ASTM B117, achieving a scribe rating of 9 per ASTM D1654

Typical Applications
- Outdoor, Parking Lots, Walkways, Roadways, Building Areas

Warranty
- Five year limited warranty

Energy and Performance Data

Lumen Maintenance (TM-21)

Drive Current	Ambient Temperature	25,000 hours*	50,000 hours*	60,000 hours*	100,000 hours**	Theoretical L70 hours**
Up to 1A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.7%	98.3%	98.1%	97.4%	> 1.9M
	50°C	98.2%	97.2%	96.8%	95.2%	> 851,000
1.2A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.5%	97.9%	97.7%	96.7%	> 1.3M

* Supported by IES TM-21 standards
** Theoretical values represent estimations commonly used; however, refer to the IES position on LED Product Lifetime Prediction, IES PS-10-18, explaining proper use of IES TM-21 and LM-80.

Lumen Multiplier

Ambient Temperature	Lumen Multiplier
0ºC	1.02
10ºC	1.01
25ºC	1.00
40ºC	0.99
50ºC	0.97

FADC Settings
SA1-SA3 (A, B, C, D Drive Current)

FADC Position	Percent of Typical Lumen Output
1	25%
2	48%
3	56%
4	65%
5	75%
6	80%
7	85%
8	90%
9	95%
10	100%

FADC Settings
SA4-SA6 (A, B, C, D Drive Current)

FADC Position	Percent of Typical Lumen Output
1	14%
2	25%
3	32%
4	43%
5	49%
6	57%
7	65%
8	72%
9	80%
10	100%

FADC Settings
SA7-SA9 (A, B, C, D Drive Current)

FADC Position	Percent of Typical Lumen Output
1	19%
2	38%
3	47%
4	63%
5	74%
6	85%
7	95%
8	97%
9	100%
10	100%

Performance Table, Drive Current "A" (615mA)

Number of Light Squares		1	2	3	4	5	6	7	8	9
Nominal Power (Watts)		33	63	93	121	154	182	215	244	274
Input Current @ 120V		0.283	0.529	0.778	1.058	1.310	1.556	1.839	2.089	2.335
Input Current @ 208V		0.165	0.309	0.460	0.618	0.771	0.919	1.082	1.240	1.379
Input Current @ 240V		0.143	0.270	0.398	0.540	0.671	0.796	0.944	1.078	1.194
Input Current @ 277V		0.125	0.237	0.352	0.473	0.581	0.705	0.818	0.962	1.057
Input Current @ 347V		0.098	0.181	0.272	0.362	0.454	0.544	0.636	0.738	0.816
Input Current @ 480V		0.073	0.133	0.200	0.267	0.335	0.400	0.470	0.554	0.600
Optics										
T1	4000K Lumens	4,619	9,180	13,628	18,059	22,861	27,070	31,796	36,863	41,385
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3
	Lumens per Watt	140	146	147	149	148	149	148	151	151
T2	4000K Lumens	4,654	9,249	13,730	18,194	23,032	27,273	32,034	37,138	41,694
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
	Lumens per Watt	141	147	148	150	150	150	149	152	152
T2R	4000K Lumens	4,716	9,372	13,913	18,437	23,340	27,637	32,462	37,634	42,251
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4
	Lumens per Watt	143	149	150	152	152	152	151	154	154
T3	4000K Lumens	4,589	9,120	13,538	17,940	22,711	26,892	31,587	36,620	41,112
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G4
	Lumens per Watt	139	145	146	148	147	148	147	150	150
T3R	4000K Lumens	4,735	9,411	13,970	18,513	23,436	27,751	32,596	37,790	42,425
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
	Lumens per Watt	143	149	150	153	152	152	152	155	155
T4FT	4000K Lumens	4,617	9,176	13,622	18,051	22,851	27,058	31,782	36,847	41,366
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	140	146	146	149	148	149	148	151	151
T4W	4000K Lumens	4,631	9,203	13,662	18,104	22,918	27,138	31,876	36,955	41,488
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	140	146	147	150	149	149	148	151	151
SL2	4000K Lumens	4,619	9,180	13,627	18,058	22,860	27,069	31,795	36,861	41,383
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5
	Lumens per Watt	140	146	147	149	148	149	148	151	151
SL3	4000K Lumens	4,586	9,115	13,531	17,931	22,699	26,879	31,571	36,602	41,091
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
	Lumens per Watt	139	145	145	148	147	148	147	150	150
SL4	4000K Lumens	4,529	9,002	13,363	17,708	22,417	26,544	31,178	36,146	40,580
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G4	B2-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	137	143	144	146	146	146	145	148	148
5NQ	4000K Lumens	4,829	9,598	14,247	18,880	23,901	28,301	33,242	38,539	43,266
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3
	Lumens per Watt	146	152	153	156	155	155	155	158	158
5MQ	4000K Lumens	4,853	9,645	14,318	18,974	24,020	28,442	33,407	38,731	43,482
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	147	153	154	157	156	156	155	159	159
5WQ	4000K Lumens	4,843	9,625	14,288	18,934	23,969	28,382	33,337	38,649	43,390
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5
	Lumens per Watt	147	153	154	156	156	156	155	158	158
SLL/ SLR	4000K Lumens	3,989	7,927	11,768	15,594	19,741	23,375	27,456	31,831	35,736
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
	Lumens per Watt	121	126	127	129	128	128	128	130	130
RW	4000K Lumens	4,774	9,488	14,085	18,665	23,628	27,979	32,863	38,100	42,774
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3
	Lumens per Watt	145	151	151	154	153	154	153	156	156
AFL	4000K Lumens	4,673	9,286	13,785	18,268	23,126	27,384	32,164	37,290	41,864
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3
	Lumens per Watt	142	147	148	151	150	150	150	153	153

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Performance Table, Drive Current "B" (800mA)

Number of Light Squares		1	2	3	4	5	6	7	8	9
Nominal Power (Watts)		44	82	121	164	204	243	286	325	364
Input Current @ 120V		0.367	0.689	1.014	1.378	1.704	2.027	2.393	2.716	3.041
Input Current @ 208V		0.213	0.401	0.594	0.802	0.997	1.188	1.400	1.605	1.782
Input Current @ 240V		0.184	0.347	0.510	0.694	0.860	1.021	1.210	1.386	1.531
Input Current @ 277V		0.160	0.303	0.449	0.605	0.757	0.898	1.065	1.242	1.347
Input Current @ 347V		0.125	0.235	0.355	0.471	0.592	0.710	0.828	0.958	1.065
Input Current @ 480V		0.092	0.172	0.258	0.344	0.432	0.517	0.605	0.706	0.775
Optics										
T1	4000K Lumens	5,748	11,423	16,957	22,470	28,446	33,683	39,563	45,867	51,494
	BUG Rating	B2-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	131	139	140	137	139	139	138	141	141
T2	4000K Lumens	5,790	11,508	17,083	22,638	28,658	33,935	39,859	46,210	51,879
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	132	140	141	138	140	140	139	142	143
T2R	4000K Lumens	5,868	11,662	17,311	22,941	29,041	34,388	40,391	46,827	52,572
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
	Lumens per Watt	133	142	143	140	142	142	141	144	144
T3	4000K Lumens	5,710	11,347	16,845	22,322	28,258	33,461	39,303	45,565	51,155
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B4-U0-G4	B4-U0-G5	B4-U0-G5
	Lumens per Watt	130	138	139	136	139	138	137	140	141
T3R	4000K Lumens	5,892	11,710	17,383	23,035	29,161	34,530	40,558	47,020	52,788
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	134	143	144	140	143	142	142	145	145
T4FT	4000K Lumens	5,745	11,418	16,949	22,460	28,433	33,668	39,546	45,847	51,471
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	131	139	140	137	139	139	138	141	141
T4W	4000K Lumens	5,762	11,451	16,999	22,526	28,517	33,767	39,662	45,982	51,622
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	131	140	140	137	140	139	139	141	142
SL2	4000K Lumens	5,747	11,422	16,956	22,469	28,444	33,681	39,561	45,865	51,491
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	131	139	140	137	139	139	138	141	141
SL3	4000K Lumens	5,707	11,342	16,836	22,311	28,244	33,444	39,283	45,542	51,129
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	130	138	139	136	138	138	137	140	140
SL4	4000K Lumens	5,636	11,201	16,627	22,034	27,893	33,028	38,794	44,976	50,493
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	128	137	137	134	137	136	136	138	139
5NQ	4000K Lumens	6,009	11,942	17,727	23,492	29,739	35,214	41,362	47,953	53,835
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3
	Lumens per Watt	137	146	147	143	146	145	145	148	148
5MQ	4000K Lumens	6,039	12,001	17,816	23,609	29,887	35,389	41,568	48,191	54,103
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5
	Lumens per Watt	137	146	147	144	147	146	145	148	149
5WQ	4000K Lumens	6,026	11,976	17,778	23,559	29,824	35,315	41,480	48,090	53,989
	BUG Rating	B3-U0-G1	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5
	Lumens per Watt	137	146	147	144	146	145	145	148	148
SLL/ SLR	4000K Lumens	4,963	9,863	14,642	19,403	24,563	29,085	34,163	39,607	44,465
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	113	120	121	118	120	120	119	122	122
RW	4000K Lumens	5,940	11,806	17,526	23,224	29,400	34,813	40,891	47,407	53,222
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	135	144	145	142	144	143	143	146	146
AFL	4000K Lumens	5,814	11,555	17,153	22,730	28,775	34,073	40,021	46,398	52,090
	BUG Rating	B1-U0-G1	B2-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G4
	Lumens per Watt	132	141	142	139	141	140	140	143	143

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Performance Table, Drive Current "C" (1050mA)

Number of Light Squares		1	2	3	4	5	6	7	8	9
Nominal Power (Watts)		57	108	160	213	269	321	377	429	481
Input Current @ 120V		0.478	0.905	1.338	1.810	2.244	2.675	3.150	3.584	4.013
Input Current @ 208V		0.279	0.532	0.780	1.064	1.313	1.559	1.845	2.093	2.339
Input Current @ 240V		0.243	0.458	0.664	0.916	1.123	1.328	1.582	1.788	1.991
Input Current @ 277V		0.213	0.404	0.582	0.808	0.997	1.164	1.401	1.589	1.745
Input Current @ 347V		0.164	0.322	0.471	0.644	0.795	0.943	1.117	1.269	1.414
Input Current @ 480V		0.121	0.235	0.341	0.469	0.579	0.681	0.814	0.923	1.022
Optics										
T1	4000K Lumens	7,101	14,113	20,950	27,763	35,146	41,616	48,882	56,671	63,623
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	125	131	131	130	131	130	130	132	132
T2	4000K Lumens	7,154	14,219	21,107	27,970	35,408	41,927	49,247	57,094	64,098
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	132	132	131	132	131	131	133	133
T2R	4000K Lumens	7,250	14,408	21,389	28,344	35,881	42,487	49,905	57,857	64,954
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	127	133	134	133	133	132	132	135	135
T3	4000K Lumens	7,054	14,020	20,812	27,580	34,914	41,342	48,560	56,297	63,203
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B4-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	124	130	130	129	130	129	129	131	131
T3R	4000K Lumens	7,280	14,468	21,477	28,461	36,029	42,663	50,111	58,096	65,222
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	128	134	134	134	134	133	133	135	136
T4FT	4000K Lumens	7,098	14,107	20,941	27,751	35,130	41,598	48,860	56,646	63,594
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	125	131	131	130	131	130	130	132	132
T4W	4000K Lumens	7,119	14,148	21,003	27,832	35,233	41,720	49,004	56,812	63,781
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	125	131	131	131	131	130	130	132	133
SL2	4000K Lumens	7,101	14,112	20,949	27,761	35,144	41,614	48,879	56,668	63,619
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	125	131	131	130	131	130	130	132	132
SL3	4000K Lumens	7,051	14,013	20,802	27,566	34,897	41,321	48,535	56,269	63,172
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	124	130	130	129	130	129	129	131	131
SL4	4000K Lumens	6,963	13,839	20,543	27,223	34,463	40,808	47,932	55,569	62,386
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	122	128	128	128	128	127	127	130	130
5NQ	4000K Lumens	7,424	14,755	21,903	29,025	36,743	43,508	51,104	59,247	66,515
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	130	137	137	136	137	136	136	138	138
5MQ	4000K Lumens	7,461	14,828	22,012	29,169	36,926	43,725	51,359	59,542	66,846
	BUG Rating	B3-U0-G1	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5
	Lumens per Watt	131	137	138	137	137	136	136	139	139
5WQ	4000K Lumens	7,445	14,797	21,966	29,108	36,849	43,633	51,250	59,417	66,705
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	131	137	137	137	137	136	136	139	139
SLL/ SLR	4000K Lumens	6,132	12,187	18,091	23,973	30,348	35,936	42,210	48,935	54,938
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	108	113	113	113	113	112	112	114	114
RW	4000K Lumens	7,340	14,587	21,653	28,694	36,325	43,013	50,522	58,573	65,757
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	129	135	135	135	135	134	134	137	137
AFL	4000K Lumens	7,183	14,276	21,193	28,084	35,552	42,098	49,448	57,327	64,359
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B4-U0-G4
	Lumens per Watt	126	132	132	132	132	131	131	134	134

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Performance Table, Drive Current "D" (1200mA)

Number of Light Squares		1	2	3	4	5	6	7	8	9
Nominal Power (Watts)		65	125	184	245	309	368	433	493	552
Input Current @ 120V		0.546	1.041	1.535	2.082	2.578	3.070	3.619	4.114	4.605
Input Current @ 208V		0.318	0.610	0.893	1.219	1.504	1.786	2.113	2.397	2.679
Input Current @ 240V		0.276	0.523	0.758	1.046	1.282	1.516	1.806	2.041	2.274
Input Current @ 277V		0.241	0.460	0.662	0.920	1.133	1.325	1.593	1.807	1.987
Input Current @ 347V		0.187	0.370	0.543	0.740	0.915	1.085	1.285	1.459	1.628
Input Current @ 480V		0.138	0.269	0.391	0.537	0.663	0.782	0.932	1.057	1.173
Optics										
T1	4000K Lumens	7,814	15,529	23,053	30,549	38,672	45,793	53,787	62,358	70,007
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	120	124	125	125	125	124	124	126	127
T2	4000K Lumens	7,872	15,645	23,225	30,777	38,962	46,135	54,189	62,824	70,530
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	125	126	126	126	125	125	127	128
T2R	4000K Lumens	7,977	15,854	23,535	31,188	39,482	46,751	54,913	63,663	71,472
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	123	127	128	127	128	127	127	129	129
T3	4000K Lumens	7,762	15,427	22,901	30,348	38,418	45,491	53,433	61,947	69,546
	BUG Rating	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B4-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	119	123	124	124	124	124	123	126	126
T3R	4000K Lumens	8,010	15,920	23,632	31,317	39,645	46,944	55,139	63,925	71,767
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	123	127	128	128	128	128	127	130	130
T4FT	4000K Lumens	7,810	15,522	23,043	30,535	38,655	45,772	53,763	62,330	69,976
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	120	124	125	125	125	124	124	126	127
T4W	4000K Lumens	7,833	15,568	23,110	30,625	38,769	45,907	53,921	62,513	70,182
	BUG Rating	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	125	126	125	125	125	125	127	127
SL2	4000K Lumens	7,813	15,528	23,052	30,547	38,670	45,790	53,784	62,354	70,003
	BUG Rating	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	120	124	125	125	125	124	124	126	127
SL3	4000K Lumens	7,758	15,419	22,889	30,332	38,398	45,468	53,406	61,916	69,511
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	119	123	124	124	124	124	123	126	126
SL4	4000K Lumens	7,662	15,228	22,605	29,955	37,921	44,903	52,742	61,146	68,646
	BUG Rating	B1-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	118	122	123	122	123	122	122	124	124
5NQ	4000K Lumens	8,169	16,235	24,101	31,938	40,431	47,874	56,232	65,193	73,190
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	126	130	131	130	131	130	130	132	133
5MQ	4000K Lumens	8,210	16,316	24,221	32,097	40,632	48,113	56,512	65,517	73,554
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	126	131	132	131	131	131	131	133	133
5WQ	4000K Lumens	8,192	16,282	24,170	32,029	40,546	48,011	56,393	65,379	73,399
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	126	130	131	131	131	130	130	133	133
SLL/ SLR	4000K Lumens	6,747	13,410	19,906	26,379	33,394	39,542	46,445	53,846	60,451
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	104	107	108	108	108	107	107	109	110
RW	4000K Lumens	8,076	16,050	23,826	31,574	39,970	47,329	55,592	64,450	72,356
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5
	Lumens per Watt	124	128	129	129	129	129	128	131	131
AFL	4000K Lumens	7,904	15,709	23,320	30,902	39,120	46,323	54,410	63,079	70,817
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G4	B4-U0-G4	B4-U0-G4
	Lumens per Watt	122	126	127	126	127	126	126	128	128

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Control Options

0-10V (DIM)
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

Photocontrol (BPC, PR and PR7)
Optional button-type photocontrol (BPC) and photocontrol receptacles (PR and PR7) provide a flexible solution to enable "dusk-to-dawn" lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PR7 receptacle.

After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a "dusk-to-dawn" period has been calculated from the photocontrol input. Specify the desired dimming profile for a simple, factory-shipped dimming solution requiring no external control wiring. Reference the After Hours Dim supplemental guide for additional information.

Dimming Occupancy Sensor (SPB and MS/DIM-LXX)
These passive infrared (PIR) sensors are factory installed in the luminaire housing. When the SPB (FSP-321 or FSP-311) or MS/DIM (FSP-211) sensor options are selected, the occupancy sensor is connected to a dimming driver and the luminaire dims when no motion is detected. After a set period of time, the luminaire turns off, and when motion is detected, the luminaire returns to full light output. Both sensors are factory preset to dim down to approximately 10% power with a time delay of five minutes. The MS/DIM sensor requires the FSIR-100 programming tool to adjust factory defaults. The SPB sensor default parameters are listed in the table below and can be configured utilizing the Sensor Configuration mobile application for iOS and Android devices. The SPB/X is configured to control only the specified number of light squares (See SPB/X Availability Table below.) An integral photocontrol can be activated with the app for "dusk-to-dawn" control or daylight harvesting - the factory default is off. Four sensor colors are available; Bronze, Black, Gray and White, and are automatically selected based on the luminaire finish as indicated by the table below.

SPB sensor finish matched to luminaire finish		
Luminaire Finish		SPB Sensor Finish*
WH	White	White
BK	Black	Black
GM	Graphite Metallic	Black
BZ	Bronze	Bronze
AP	Gray	Gray
DP	Dark Platinum	Gray

*SPB bezel color automatically selected based on luminaire finish

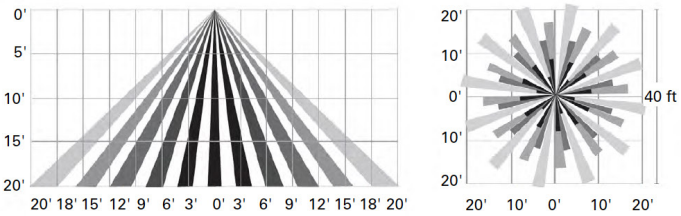
SPB/X Availability Table	
Fixture Square Count	Available SPB/X Square Count
1	Not Available
2	Not Available
3	Not Available
4	2
5	2 or 3
6	3
7	2, 3, 4 or 5
8	2, 3, 5 or 6
9	3 or 6

Default Program Settings (Out of the Box Functionality)

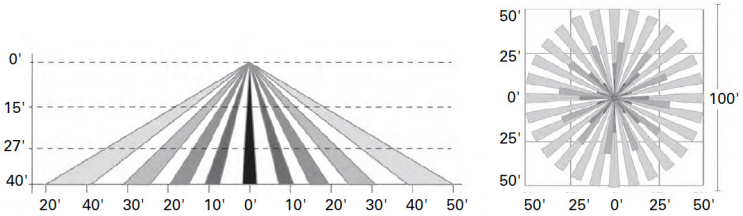
Occupancy Sensor				
Setting	MS/DIM	SPB	WaveLinx Lite (WOF / WOB)	WaveLinx (SWPD)
High Mode %	100%	100%	100%	100%
Low Mode %	10%	10%	50%	50%
Time Delay	5 min	5 min	15 min	15 min
Cut Off Delay	1 hr	1 hr	Disabled	Disabled
Photocell Enabled	No	No	Yes	Yes

WaveLinx Wireless Control and Monitoring System
Operates on a wireless mesh network based on IEEE 802.15.4 standards enabling wireless control of outdoor lighting. WaveLinx and WaveLinx Lite sensors utilize the Zhaga Book 18 compliant 4-PIN receptacle (ZD or ZW), while the WOLC control module utilizes a 7-PIN receptacle. ZW option provides 4-PIN receptacle and control module to enable future installation of WaveLinx sensors. ZD option provides 4-PIN receptacle and sensor-ready (SR) driver to enable future installation of WaveLinx sensors, power monitoring, and advanced functionality. WaveLinx (SWPD4 to SWPD5) outdoor wireless sensors offer passive infrared (PIR) occupancy and photocell for closed loop daylight harvesting, and can be factory or field-installed. Sensors are factory preset to dim down to 50% after 15 minutes of no motion detected. Two lens options are available for mounting heights of 7' to 40'. Use the WaveLinx mobile application for set-up and configuration. At least one Wireless Area Controller (WAC) is required for full functionality and remote communication (including adjustment of any factory pre-sets). WaveLinx Lite (WOF and WOB) outdoor wireless sensors provide PIR occupancy and photocell for closed loop daylight harvesting, and can be factory or field-installed. Sensors are factory preset to dim down to 50% after 15 minutes of no motion detected. Two lens options are available for mounting heights of 7' to 40'. Use the WaveLinx Lite mobile application for set-up and configuration. WAC not required. WaveLinx Outdoor Control Module (WOLC-7P-10A) accessory provides a photocontrol enabling astronomic or time-based schedules to provide ON, OFF and dimming control of fixtures utilizing a 7-PIN receptacle. The out-of-box functionality is ON at dusk and OFF at dawn.

For mounting heights up to 15' (SWPD4 and WOB)



For mounting heights up to 40' (SWPD5 and WOF)



LumenSafe Integrated Network Security Camera (LD)
Cooper Lighting Solutions brings ease of camera deployment to a whole new level. No additional wiring is needed beyond providing line power to the luminaire. A variety of networking options allows security integrators to design the optimal solution for active surveillance. As the ideal solution to meet the needs for active surveillance, the LumenSafe integrated network camera is a streamlined, outdoor-ready fixed dome that provides HDTV 1080p video. This IP camera is optimally designed for deployment in the video management system or security software platform of choice.

Synapse (DIM10)
SimplySNAP integrated wireless controls system by Synapse. Includes factory installed DIM10 Synapse control module and FSP-201 motion sensor; requires additional Synapse system components for operation. Contact Synapse at www.synapsewireless.com for product support, warranty and terms and conditions.

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Specifications and dimensions subject to change without notice.

DESCRIPTION

The Entri LED luminaire features a classic and stylish design with the added benefits of solid state lighting technology, offering outstanding uniformity and energy savings. Using Cooper Lighting Solutions' proprietary LED LightSquare technology and AccuLED Optics™ system, the Entri LED luminaire offers designers vast versatility in system design, function and performance. Use Entri LED for wall mount architectural lighting applications and egress lighting requirements. UL/cUL listed for use in wet locations.

Catalog #		**Type**
Project		
Comments		**Date**
Prepared by		

SPECIFICATION FEATURES

Construction

HOUSING: Heavy wall, one-piece, die-cast aluminum construction for precise tolerance control and repeatability in manufacturing. Integral extruded aluminum heat sink provides superior thermal heat transfer in +40°C ambient environments. FACEPLATE / DOOR: One-piece, die-cast aluminum construction. Captive, side hinged faceplate swings open via release of one flush mount die-cast aluminum latch on housing side panel. GASKET: One-piece molded silicone gasket mates perfectly between the door and housing for repeatable seal. LENS: Uplight lens is impact-resistant, 5/32" thick tempered frosted glass sealed to housing with continuous bead silicone gasket. Downlight lens is an LED LightSquare with integral optics sealed for IP66 rating. HARDWARE: Stainless steel mounting screws and latch hardware allow access to electrical components for installation and servicing.

Optics

Choice of 9 patented, high efficiency AccuLED Optics™ distributions. Optics are precisely designed to shape the light output, maximizing efficiency and application spacing. AccuLED Optics technology creates consistent distributions with the scalability to meet customized application requirements. CRI and CCT offering includes 2200K, 2700K, 3000K, 3500K, 4000K, 5000K, and 5700K with minimum 70CRI and 2700K and 3000K with minimum 80CRI all within 5-step MacAdam ellipse.

Electrical

LED drivers mount to die-cast aluminum back housing for optimal heat sinking, operation efficacy, and prolonged life. Standard drivers feature electronic universal voltage (120-277V 50/60Hz), 347V 60Hz or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Greater than 0.9 power factor, less than 20% harmonic distortion, and is suitable for operation in -40°C to 40°C ambient environments and optional 50C construction available. All fixtures are shipped standard with 10kV/10kA common – and differential – mode surge protection. LightSquare feature an IP66 enclosure rating and maintain greater than 98% lumen maintenance at 60,000 hours per IESNA TM-21. Emergency egress options for -20°C ambient environments, WaveLinx™, occupancy sensor, and dimming options available.

Mounting

JUNCTION BOX: Standard with zinc-plated, quick-mount junction box plate that mounts directly to 4" J-Box. LightSquare mounts facing downward. Fixture slides over mounting plate and is secured with two stainless steel fasteners. Mounting plate features a one-piece EPDM gasket on back side of plate to firmly seal fixture to wall surface, forbidding entry of moisture and particulates. Optional mounting arrangements utilize a die-cast mounting adaptor box to allow for LED battery pack, surface conduit and trough branch wiring. The Entri LED luminaire is approved for mounting on combustible surfaces.

Finish

Housing is finished in five-stage super TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. LightSquare cover plates are standard white and may be specified to match finish of luminaire housing. Standard colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available. Consult Outdoor Architectural Colors brochure for a complete selection.

Warranty

Five-year warranty.







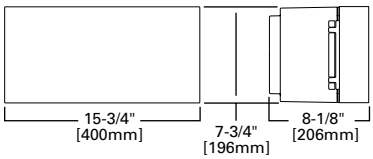
ENC/ENT/ENV
ENTRI LED

LightSquare
Solid State LED

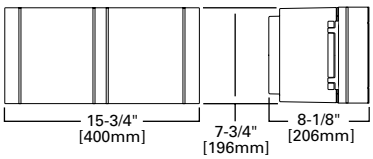
ARCHITECTURAL WALL LUMINAIRE

DIMENSIONS

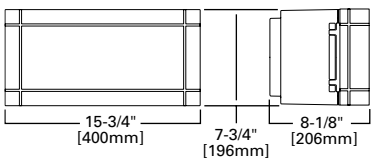
ENC (Round Clean)



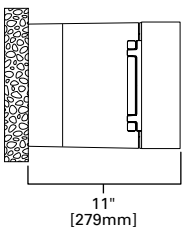
ENT (Triangle Reveals)



ENV (Round Reveals)



CONDUIT MOUNT / BATTERY BACK BOX



CERTIFICATION DATA

DesignLights Consortium® Qualified*
UL/cUL Listed
ISO 9001
IP66 LightSquares
LM79 / LM80 Compliant

ENERGY DATA

Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120-277V/50 & 60Hz, 347V/60Hz, 480V/60Hz
-30°C Minimum Temperature
40°C Ambient Temperature Rating (Optional)

SHIPPING DATA

Approximate Net Weight:
15.2 lbs. (6.9 kgs.) - Without backbox
29.1 lbs. (13.2 kgs.) - With backbox

ORDERING INFORMATION

Sample Number: ENC-SA1C-740-U-T4W-GM-ULG-HA-ZW-SWPD4BK

Domestic Preferences [25]	Product Family [1]	Light Engine		Color Temperature	Voltage	Distribution	Finish
		Configuration	Drive Current				
[Blank]=Standard **BAA**=Buy American Act **TAA**=Trade Agreements Act	**ENC**=Entri Round Clean **ENT**=Entri Triangle Reveals **ENV**=Entri Round Reveals	**SA1**=1 Square	**A**=350mA **B**=450mA **C**=600mA **D**=800mA **E**=1000mA **F**=1200mA	**722**=70CRI, 2200K [3] **727**=70CRI, 2700K [3] **730**=70CRI, 3000K [3] **735**=70CRI, 3500K **740**=70CRI, 4000K **750**=70CRI, 5000K [3] **760**=70CRI, 5700K [3] **827**=80CRI, 2700K [3] **830**=80CRI, 3000K [3] **835**=80CRI, 3500K [3]	**U**=UNV (120-277) **1**=120 **2**=208 **3**=240 **4**=277 **8**=480 **9**=347	**T2**=Type II **T3**=Type III **T4FT**=Type IV Forward Throw **T4W**=Type IV Wide **SL2**=Type II w/Spill Control **SL3**=Type III w/Spill Control **SL4**=Type IV w/Spill Control **SLL**=90° Spill Light Eliminator Left **SLR**=90° Spill Light Eliminator Right	**BZ**=Bronze **AP**=Grey **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White

Options (Add as Suffix)

F=Singled fused (Must specify voltage, fused on single hot leg of 120, 277, or 347)
FF=Doubled fused (Must specify voltage, fused on both hot legs of 208, 240, or 480)
X=Driver Surge Protection (6kV) Only
20K=Series 20kV UL 1449 Surge Protective Device
2L=Two-Circuit Light Engine [24]
DIM=0-10V Dimming Driver [5, 6]
EBP=Battery Pack with Back Box (Must specify voltage, available in 120V or 277V) [2, 4, 9]
CBP=Battery Pack with Back Box, Cold Weather Rated (Must specify voltage, available in 120V or 277V) [2, 4, 10]
CBP-CEC=Battery Pack with Back Box, Cold Weather Rated, CEC compliant (Must specify voltage, available in 120V or 277V) [2, 4, 10]
R90=Rotated Right 90°
L90=Rotated Left 90°
HSS=Factory Installed House Side Shield [16]
LCF=LightSquare Trim Plate Matches Housing Finish [15]
ULG=Uplight Glow [7]
HA=50°C High Ambient [8]
WG=Wire Guard
TR=Tamper Resistant Hardware
BOX=Empty back box (1/2" NPT, each side with plugs installed
BPC=Button Type Photocontrol (Must specify voltage, available in 120, 208, 240, 277V, 347, and 480)
AHD145=After Hours Dim, 5 Hours, 50% [17]
AHD245=After Hours Dim, 6 Hours, 50% [17]
AHD255=After Hours Dim, 7 Hours, 50% [17]
AHD355=After Hours Dim, 8 Hours, 50% [17]
SPB1=Dimming Occupancy Sensor with Bluetooth Interface, <8' Mounting [13, 22]
SPB2=Dimming Occupancy Sensor with Bluetooth Interface, 8'-20' Mounting [13, 22]
SPB4=Dimming Occupancy Sensor with Bluetooth Interface, 21'-40' Mounting [13, 22]
MS-L08=Motion Sensor for ON/OFF Operation, Up to 8' Mounting Height [11, 12, 13]
MS-L20=Motion Sensor for ON/OFF Operation, 9' - 20' Mounting Height [11, 12, 13]
MS/DIM-L08=Motion Sensor for Dimming Operation, Up to 8' Mounting Height [11, 12, 13]
MS/DIM-L20=Motion Sensor for Dimming Operation, 9' - 20' Mounting Height [11, 12, 13]
ZW=WaveLinx-enabled 4-PIN Twistlock Receptacle [19,20]
ZW-SWPD4XX=WaveLinx Pro, Dimming Motion and Daylight, WAC Programmable, 7' - 15' Mounting [19,20,21]
ZW-SWPD5XX=WaveLinx Pro, Dimming Motion and Daylight, WAC Programmable, 15' - 40' Mounting [19,20,21]
CC=Coastal Construction [23]

Accessories (Order Separately) [26]

MA1253=10kV Circuit Module Replacement
MA1253-480V=10kV Circuit Module Replacement (480V only)
FSIR-100-PK=Wireless Configuration Tool for Occupancy Sensor [11]
VA6172SA=Wireguard Accessory
VA6173=Tamper-Resistant Driver Bit
VA6174=Vandal Shield Accessory
VA2001-XX=Thru-Way Conduit Box
LS/HSS=House Side Shield (Works with all distributions listed for Entri)
WOLC-7P-10A=WaveLinx Outdoor Control Module (7-pin)
SWPD4-XX=WaveLinx Sensor, Dimming Motion and Daylight, WAC Programmable, 7' - 15' Mounting [19, 20, 21]
SWPD5-XX=WaveLinx Sensor, Dimming Motion and Daylight, WAC Programmable, 15' - 40' Mounting [19, 20, 21]

NOTES:
1. DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details. DLC Family Code: MMMSPQ
2. EBP or CBP options limited to 25°C. Control option limited to BPC=Button Type Photocontrol (must specify voltage).
3. Extended lead times apply. Use dedicated IES files when performing layouts.
4. Not available with HA option.
5. Cannot be used with other control options.
6. Low voltage control lead brought out 18" outside fixture.
7. ULG only available in 740
8. Not available with ULG option
9. EBP is rated for minimum operating temperature of 0°C (32°F). Operates downlight for 90-minutes.
10. CBP is rated for minimum operating temperature of -20°C (-4°F). Operates downlight for 90-minutes.
11. The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative at Cooper Lighting
12. Replace LXX with the available mounting height options: L08, L20, L40 or L40W are the only choices.
13. Includes integral photosensor.
14. Bronze sensor is shipped with Bronze fixtures. White sensor shipped on all other housing color options.
15. Not available with HSS option.
16. Only for use with SL2, SL3 and SL4 distributions. The light square trim plate is painted black when the HSS option is selected.
17. Requires the use of BPC photocontrol. See After Hours Dim supplemental guide for additional information.
18. Control option limited to BPC=Button Type Photocontrol (must specify voltage).
19. WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed.
20. Requires ZW.
21. Replace XX with sensor color (WH, BZ, or BK).
22. Smart device with mobile application required to change system defaults. See controls section for details.
23. Coastal construction finish salt spray tested to over 5,000-hours per ASTM B117, with a scribe rating of 9 per ASTM D1654.
24. 2L not available with FF, ULG or AHD options. Controls and/or battery packs operate only one of the two circuits when 2L is specified.
25. Only product configurations with these designated prefixes are built to be compliant with the Buy American Act of 1933 (BAA) or Trade Agreements Act of 1979 (TAA), respectively. Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.
26. Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
722 CCT	**T2 (Type II)**	Lumens	565	2,000	2,508	3,300	4,131	5,147	5,696
		Lumens per Watt‡	33.0	99.5	98.7	99.1	95.8	90.0	86.2
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	429	1,521	1,907	2,509	3,141	3,913	4,331
		Lumens per Watt‡	43.5	75.7	75.1	75.3	72.9	68.4	65.5
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1
	T3 (Type III)	Lumens	578	2,046	2,566	3,376	4,226	5,265	5,827
		Lumens per Watt‡	44.5	101.8	101.0	101.4	4,226	92.0	88.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	436	1,544	1,936	2,548	3,189	3,973	4,398
		Lumens per Watt‡	33.5	76.8	76.2	76.5	74.0	69.5	66.5
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	T4FT (Type IV Forward Throw)	Lumens	543	1,924	2,413	3,175	3,974	4,951	5,480
		Lumens per Watt‡	41.8	95.7	95.0	95.3	92.2	86.6	82.9
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	402	1,423	1,785	2,349	2,939	3,662	4,054
		Lumens per Watt‡	30.9	70.8	70.3	70.5	68.2	64.0	61.3
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T4W (Type IV Wide)	Lumens	567	2,009	2,520	3,316	4,150	5,171	5,723
		Lumens per Watt‡	43.6	100.0	99.2	99.6	96.3	90.4	86.6
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	423	1,499	1,879	2,473	3,095	3,856	4,268
		Lumens per Watt‡	32.5	74.6	74.0	74.3	71.8	67.4	64.6
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1
	SL2 (Type II w/ Spill Control)	Lumens	560	1,985	2,489	3,275	4,099	5,108	5,653
		Lumens per Watt‡	43.1	98.8	98.0	98.3	95.1	89.3	85.5
		BUG Rating	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL2-HSS (Type II w/ Spill Control, House Side Shield)	Lumens	459	1,624	2,037	2,680	3,355	4,180	4,626
		Lumens per Watt‡	35.3	80.8	80.2	80.5	77.8	73.1	70.0
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SL3 (Type III w/ Spill Control)	Lumens	557	1,971	2,472	3,253	4,072	5,073	5,615
		Lumens per Watt‡	42.8	98.1	97.3	97.7	94.5	88.7	84.9
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL3-HSS (Type III w/ Spill Control, House Side Shield)	Lumens	475	1,684	2,111	2,779	3,478	4,333	4,796
		Lumens per Watt‡	36.5	83.8	83.1	83.5	80.7	75.8	72.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SL4 (Type IV w/ Spill Control)	Lumens	538	1,905	2,389	3,144	3,935	4,903	5,427
		Lumens per Watt‡	41.4	94.8	94.1	94.4	91.3	85.7	82.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL4-HSS (Type IV w/ Spill Control, House Side Shield)	Lumens	466	1,649	2,068	2,721	3,406	4,243	4,696
		Lumens per Watt‡	35.8	82.0	81.4	81.7	79.0	74.2	71.0
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2

POWER AND LUMENS

1 LightSquare (SA Series)			ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
722 CCT	**SLR (90° Spill Light Eliminator Right)**	Lumens	502	1,777	2,228	2,932	3,670	4,572	5,061
		Lumens per Watt‡	38.6	88.4	87.7	88.0	85.2	79.9	76.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	427	1,511	1,895	2,493	3,121	3,888	4,303
		Lumens per Watt‡	32.8	75.2	74.6	74.9	72.4	68.0	65.1
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL (90° Spill Light Eliminator Left)	Lumens	502	1,777	2,228	2,932	3,670	4,572	5,061
		Lumens per Watt‡	38.6	88.4	87.7	88.0	85.2	79.9	76.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	427	1,511	1,895	2,493	3,121	3,888	4,303
		Lumens per Watt‡	32.8	75.2	74.6	74.9	72.4	68.0	65.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
727 CCT	**T2 (Type II)**	Lumens	642	2,275	2,853	3,755	4,699	5,855	6,481
		Lumens per Watt‡	49.4	113.2	112.3	112.8	109.0	102.4	98.0
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	488	1,730	2,169	2,855	3,573	4,452	4,927
		Lumens per Watt‡	37.5	86.1	85.4	85.7	82.9	77.8	74.5
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1
	T3 (Type III)	Lumens	657	2,328	2,919	3,841	4,807	5,990	6,630
		Lumens per Watt‡	50.5	115.8	114.9	115.3	111.5	104.7	100.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	496	1,757	2,203	2,899	3,628	4,520	5,003
		Lumens per Watt‡	38.2	87.4	86.7	87.1	84.2	79.0	75.7
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	T4FT (Type IV Forward Throw)	Lumens	618	2,189	2,745	3,612	4,521	5,633	6,234
		Lumens per Watt‡	47.5	108.9	108.1	108.5	104.9	98.5	94.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	457	1,619	2,030	2,672	3,344	4,166	4,612
		Lumens per Watt‡	35.2	80.5	79.9	80.2	77.6	72.8	69.8
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4W (Type IV Wide)	Lumens	645	2,286	2,867	3,772	4,721	5,883	6,511
		Lumens per Watt‡	49.6	113.7	112.9	113.3	109.5	102.8	98.5
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	481	1,705	2,138	2,813	3,521	4,387	4,856
		Lumens per Watt‡	37.0	84.8	84.2	84.5	81.7	76.7	73.5
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2
	SL2 (Type II w/Spill Control)	Lumens	638	2,258	2,832	3,726	4,664	5,811	6,431
		Lumens per Watt‡	49.1	112.3	111.5	111.9	108.2	101.6	97.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL2-HSS (Type II w/Spill Control, House Side Shield)	Lumens	522	1,848	2,317	3,049	3,817	4,755	5,263
		Lumens per Watt‡	40.2	91.9	91.2	91.6	88.6	83.1	79.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
727 CCT	**SL3 (Type III w/Spill Control)**	Lumens	633	2,243	2,813	3,701	4,632	5,771	6,388
		Lumens per Watt‡	48.7	111.6	110.7	111.1	107.5	100.9	96.6
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL3-HSS (Type III w/Spill Control, House Side Shield)	Lumens	541	1,915	2,402	3,161	3,956	4,929	5,456
		Lumens per Watt‡	41.6	95.3	94.6	94.9	91.8	86.2	82.5
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL4 (Type IV w/Spill Control)	Lumens	612	2,168	2,718	3,577	4,477	5,578	6,174
		Lumens per Watt‡	47.1	107.9	107.0	107.4	103.9	97.5	93.4
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SL4-HSS (Type IV w/Spill Control, House Side Shield)	Lumens	530	1,876	2,352	3,096	3,874	4,827	5,343
		Lumens per Watt‡	40.8	93.3	92.6	93.0	89.9	84.4	80.8
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLR (90° Spill Light Eliminator Right)	Lumens	571	2,021	2,535	3,336	4,175	5,202	5,758
		Lumens per Watt‡	43.9	100.5	99.8	100.2	96.9	90.9	87.1
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	485	1,719	2,156	2,837	3,550	4,423	4,896
		Lumens per Watt‡	37.3	85.5	84.9	85.2	82.4	77.3	74.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL (90° Spill Light Eliminator Left)	Lumens	571	2,021	2,535	3,336	4,175	5,202	5,758
		Lumens per Watt‡	43.9	100.5	99.8	100.2	96.9	90.9	87.1
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	485	1,719	2,156	2,837	3,550	4,423	4,896
		Lumens per Watt‡	37.3	85.5	84.9	85.2	82.4	77.3	74.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
730 CCT	**T2 (Type II)**	Lumens	700	2,478	3,107	4,089	5,117	6,376	7,057
		Lumens per Watt‡	53.8	123.3	122.3	122.8	118.7	111.5	106.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	532	1,884	2,362	3,109	3,891	4,848	5,366
		Lumens per Watt‡	40.9	93.7	93.0	93.4	90.3	84.8	81.2
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2
	T3 (Type III)	Lumens	716	2,535	3,179	4,183	5,235	6,523	7,219
		Lumens per Watt‡	55.1	126.1	125.2	125.6	121.5	114.0	109.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	540	1,913	2,399	3,157	3,951	4,922	5,448
		Lumens per Watt‡	41.5	95.2	94.4	94.8	91.7	86.0	82.4
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	T4FT (Type IV Forward Throw)	Lumens	673	2,384	2,989	3,933	4,923	6,134	6,789
		Lumens per Watt‡	51.8	118.6	117.7	118.1	114.2	107.2	102.7
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	498	1,763	2,211	2,910	3,642	4,537	5,022
		Lumens per Watt‡	38.3	87.7	87.0	87.4	84.5	79.3	76.0
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
730 CCT	**T4W (Type IV Wide)**	Lumens	703	2,489	3,122	4,108	5,141	6,406	7,090
		Lumens per Watt‡	54.1	123.8	122.9	123.4	119.3	112.0	107.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	524	1,857	2,328	3,064	3,835	4,778	5,288
		Lumens per Watt‡	40.3	92.4	91.7	92.0	89.0	83.5	80.0
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2	B1-U0-G2
	SL2 (Type II w/Spill Control)	Lumens	694	2,459	3,084	4,058	5,079	6,328	7,004
		Lumens per Watt‡	53.4	122.3	121.4	121.9	117.8	110.6	106.0
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2U0-G2
	SL2-HSS (Type II w/Spill Control, House Side Shield)	Lumens	568	2,012	2,524	3,321	4,156	5,178	5,732
		Lumens per Watt‡	43.7	100.1	99.4	99.7	96.4	90.5	86.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL3 (Type III w/Spill Control)	Lumens	690	2,442	3,063	4,030	5,044	6,285	6,956
		Lumens per Watt‡	53.1	121.5	120.6	121.0	117.0	109.9	105.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SL3-HSS (Type III w/Spill Control, House Side Shield)	Lumens	589	2,086	2,616	3,442	4,308	5,368	5,941
		Lumens per Watt‡	45.3	103.8	103.0	103.4	100.0	93.8	89.9
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL4 (Type IV w/Spill Control)	Lumens	666	2,361	2,960	3,895	4,875	6,074	6,723
		Lumens per Watt‡	51.2	117.5	116.5	117.0	113.1	106.2	101.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SL4-HSS (Type IV w/Spill Control, House Side Shield)	Lumens	577	2,043	2,562	3,371	4,219	5,257	5,818
		Lumens per Watt‡	44.4	101.6	100.9	101.2	97.9	91.9	88.0
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLR (90° Spill Light Eliminator Right)	Lumens	622	2,201	2,761	3,633	4,547	5,665	6,270
		Lumens per Watt‡	47.8	109.5	108.7	109.1	105.5	99.0	94.9
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	529	1,872	2,347	3,089	3,866	4,817	5,331
		Lumens per Watt‡	40.7	93.1	92.4	92.8	89.7	84.2	80.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL (90° Spill Light Eliminator Left)	Lumens	622	2,201	2,761	3,633	4,547	5,665	6,270
		Lumens per Watt‡	47.8	109.5	108.7	109.1	105.5	99.0	94.9
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	529	1,872	2,347	3,089	3,866	4,817	5,331
		Lumens per Watt‡	40.7	93.1	92.4	92.8	89.7	84.2	80.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
735 CCT	**T2 (Type II)**	Lumens	722	2,556	3,205	4,218	5,279	6,577	7,279
		Lumens per Watt‡	55.5	127.2	126.2	126.7	122.5	115.0	110.1
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	549	1,943	2,437	3,207	4,013	5,000	5,535
		Lumens per Watt‡	42.2	96.7	95.9	96.3	93.1	87.4	83.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
735 CCT	**T3 (Type III)**	Lumens	738	2,614	3,279	4,314	5,400	6,728	7,447
		Lumens per Watt‡	56.8	130.0	129.1	129.5	125.3	117.6	112.7
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	557	1,973	2,474	3,256	4,075	5,077	5,620
		Lumens per Watt‡	42.8	98.2	97.4	97.8	94.5	88.8	85.0
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T4FT (Type IV Forward Throw)	Lumens	694	2,459	3,083	4,057	5,078	6,327	7,003
		Lumens per Watt‡	53.4	122.3	121.4	121.8	117.8	110.6	105.9
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	514	1,819	2,281	3,001	3,756	4,680	5,180
		Lumens per Watt‡	39.5	90.5	89.8	90.1	87.1	81.8	78.4
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4W (Type IV Wide)	Lumens	725	2,568	3,220	4,237	5,303	6,608	7,314
		Lumens per Watt‡	55.8	127.8	126.8	127.2	123.0	115.5	110.7
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	541	1,915	2,402	3,160	3,955	4,928	5,455
		Lumens per Watt‡	41.6	95.3	94.6	94.9	91.8	86.2	82.5
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL2 (Type II w/Spill Control)	Lumens	716	2,536	3,181	4,186	5,239	6,527	7,224
		Lumens per Watt‡	55.1	126.2	125.2	125.7	121.6	114.1	109.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2
	SL2-HSS (Type II w/Spill Control, House Side Shield)	Lumens	586	2,076	2,603	3,425	4,287	5,341	5,912
		Lumens per Watt‡	45.1	103.3	102.5	102.9	99.5	93.4	89.4
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL3 (Type III w/Spill Control)	Lumens	711	2,519	3,159	4,157	5,203	6,483	7,175
		Lumens per Watt‡	54.7	125.3	124.4	124.8	120.7	113.3	108.5
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SL3-HSS (Type III w/Spill Control, House Side Shield)	Lumens	608	2,152	2,698	3,551	4,444	5,537	6,128
		Lumens per Watt‡	46.8	107.1	106.2	106.6	103.1	96.8	92.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL4 (Type IV w/Spill Control)	Lumens	687	2,435	3,053	4,018	5,029	6,266	6,935
		Lumens per Watt‡	52.8	121.1	120.2	120.7	116.7	109.5	104.9
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SL4-HSS (Type IV w/Spill Control, House Side Shield)	Lumens	595	2,107	2,642	3,477	4,352	5,422	6,001
		Lumens per Watt‡	45.8	104.8	104.0	104.4	101.0	94.8	90.8
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SLR (90° Spill Light Eliminator Right)	Lumens	641	2,271	2,847	3,747	4,690	5,843	6,467
		Lumens per Watt‡	49.3	113.0	112.1	112.5	108.8	102.2	97.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	545	1,931	2,421	3,186	3,988	4,968	5,499
		Lumens per Watt‡	41.9	96.1	95.3	95.7	92.5	86.9	83.2
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
735 CCT	**SLL (90° Spill Light Eliminator Left)**	Lumens	641	2,271	2,847	3,747	4,690	5,843	6,467
		Lumens per Watt‡	49.3	113.0	112.1	112.5	108.8	102.2	97.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	545	1,931	2,421	3,186	3,988	4,968	5,499
		Lumens per Watt‡	41.9	96.1	95.3	95.7	92.5	86.9	83.2
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
740 CCT	**T2 (Type II)**	Lumens	768	2,721	3,412	4,490	5,619	7,001	7,749
		Lumens per Watt‡	59.1	135.4	134.3	134.8	130.4	122.4	117.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	584	2,069	2,594	3,414	4,272	5,323	5,892
		Lumens per Watt‡	44.9	102.9	102.1	102.5	99.1	93.1	89.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2	B1-U0-G2
	T2-ULG (Type III, House Side Shield)	Lumens	768	4,499	5,190	6,268	7,397	8,779	9,527
		Lumens per Watt‡	59.1	122.3	123.3	125.4	123.7	118.8	115.1
		BUG Rating	--	--	--	--	--	--	--
	T2-HSS-ULG (Type III, House Side Shield)	Lumens	584	3,847	4,372	5,192	6,050	7,101	7,670
		Lumens per Watt‡	44.9	104.5	103.8	103.8	101.2	96.1	92.6
		BUG Rating	--	--	--	--	--	--	--
	T3 (Type III)	Lumens	786	2,783	3,490	4,593	5,748	7,162	7,927
		Lumens per Watt‡	60.5	138.5	137.4	137.9	133.4	125.2	119.9
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	593	2,100	2,634	3,466	4,338	5,405	5,982
		Lumens per Watt‡	45.6	104.5	103.7	104.1	100.6	94.5	90.5
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T3-ULG (Type III, House Side Shield)	Lumens	786	4,561	5,268	6,371	7,526	8,940	9,705
		Lumens per Watt‡	60.5	123.9	125.1	127.4	125.9	121.0	117.2
		BUG Rating	--	--	--	--	--	--	--
	T3-HSS-ULG (Type III, House Side Shield)	Lumens	593	3,878	4,412	5,244	6,116	7,183	7,760
		Lumens per Watt‡	45.6	105.4	104.8	104.9	102.3	97.2	93.7
		BUG Rating	--	--	--	--	--	--	--
	T4FT (Type IV Forward Throw)	Lumens	739	2,617	3,282	4,319	5,406	6,735	7,455
		Lumens per Watt‡	56.8	130.2	129.2	129.7	125.4	117.7	112.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	547	1,936	2,428	3,195	3,999	4,982	5,514
		Lumens per Watt‡	42.1	96.3	95.6	95.9	92.8	87.1	83.4
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4FT-ULG (Type III, House Side Shield)	Lumens	739	4,395	5,060	6,097	7,184	8,513	9,233
		Lumens per Watt‡	56.8	119.4	120.2	121.9	120.1	115.2	111.5
		BUG Rating	--	--	--	--	--	--	--
	T4FT-HSS-ULG (Type III, House Side Shield)	Lumens	547	3,714	4,206	4,973	5,777	6,760	7,292
		Lumens per Watt‡	42.1	100.9	99.9	99.5	96.6	91.5	88.1
		BUG Rating	--	--	--	--	--	--	--

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
740 CCT	**T4W (Type IV Wide)**	Lumens	772	2,733	3,428	4,511	5,646	7,034	7,785
		Lumens per Watt‡	59.4	136.0	135.0	135.5	131.0	123.0	117.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	576	2,039	2,556	3,364	4,210	5,246	5,806
		Lumens per Watt‡	44.3	101.4	100.6	101.0	97.7	91.7	87.8
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4W-ULG (Type III, House Side Shield)	Lumens	772	4,511	5,206	6,289	7,424	8,812	9,563
		Lumens per Watt‡	59.4	122.6	123.7	125.8	124.1	119.2	115.5
		BUG Rating	--	--	--	--	--	--	--
	T4W-HSS-ULG (Type III, House Side Shield)	Lumens	576	3,817	4,334	5,142	5,988	7,024	7,584
		Lumens per Watt‡	44.3	103.7	102.9	102.8	100.1	95.0	91.6
		BUG Rating	--	--	--	--	--	--	--
	SL2 (Type II w/Spill Control)	Lumens	762	2,700	3,386	4,456	5,577	6,948	7,690
		Lumens per Watt‡	58.6	134.3	133.3	133.8	129.4	121.5	116.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2
	"SL2-HSS (Type II w/Spill Control, House Side Shield)	Lumens	624	2,210	2,771	3,646	4,564	5,686	6,293
		Lumens per Watt‡	48.0	110.0	109.1	109.5	105.9	99.4	95.2
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	"SL2-ULG (Type III, House Side Shield)"	Lumens	762	4,478	5,164	6,234	7,355	8,726	9,468
		Lumens per Watt‡	58.6	121.7	122.7	124.7	123.0	118.1	114.3
		BUG Rating	--	--	--	--	--	--	--
	"SL2-HSS-ULG (Type III, House Side Shield)"	Lumens	624	3,988	4,549	5,424	6,342	7,464	8,071
		Lumens per Watt‡	48.0	108.4	108.1	108.5	106.1	101.0	97.5
		BUG Rating	--	--	--	--	--	--	--
	"SL3 (Type III w/Spill Control)"	Lumens	757	2,682	3,363	4,425	5,539	6,901	7,638
		Lumens per Watt‡	58.2	133.4	132.4	132.9	128.5	120.6	115.6
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	"SL3-HSS (Type III w/Spill Control, House Side Shield)"	Lumens	647	2,290	2,872	3,780	4,731	5,894	6,524
		Lumens per Watt‡	49.8	113.9	113.1	113.5	109.8	103.0	98.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	"SL3-ULG (Type III, House Side Shield)"	Lumens	757	4,460	5,141	6,203	7,317	8,679	9,416
		Lumens per Watt‡	58.2	121.2	122.1	124.1	122.4	117.4	113.7
		BUG Rating	--	--	--	--	--	--	--
	"SL3-HSS-ULG (Type III, House Side Shield)"	Lumens	647	4,068	4,650	5,558	6,509	7,672	8,302
		Lumens per Watt‡	49.8	110.5	110.5	111.2	108.8	103.8	100.3
		BUG Rating	--	--	--	--	--	--	--
	"SL4 (Type IV w/Spill Control)"	Lumens	732	2,592	3,250	4,277	5,353	6,670	7,383
		Lumens per Watt‡	56.3	129.0	128.0	128.4	124.2	116.6	111.7
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	"SL4-HSS (Type IV w/Spill Control, House Side Shield)"	Lumens	633	2,243	2,813	3,701	4,633	5,772	6,389
		Lumens per Watt‡	48.7	111.6	110.7	111.1	107.5	100.9	96.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
740 CCT	**SL4-ULG (Type III, House Side Shield)**	Lumens	732	4,370	5,028	6,055	7,131	8,448	9,161
		Lumens per Watt‡	56.3	118.8	119.4	121.1	119.2	114.3	110.6
		BUG Rating	--	--	--	--	--	--	--
	SL4-HSS-ULG (Type III, House Side Shield)	Lumens	633	4,021	4,591	5,479	6,411	7,550	8,167
		Lumens per Watt‡	48.7	109.3	109.0	109.6	107.2	102.2	98.6
		BUG Rating	--	--	--	--	--	--	--
	SLR (90° Spill Light Eliminator Right)	Lumens	682	2,417	3,031	3,989	4,992	6,220	6,885
		Lumens per Watt‡	52.5	120.2	119.3	119.8	115.8	108.7	104.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	580	2,055	2,577	3,392	4,245	5,289	5,854
		Lumens per Watt‡	44.6	102.2	101.5	101.9	98.5	92.5	88.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	SLR-ULG (Type III, House Side Shield)	Lumens	682	4,195	4,809	5,767	6,770	7,998	8,663
		Lumens per Watt‡	52.5	114.0	114.2	115.3	113.2	108.2	104.6
		BUG Rating	--	--	--	--	--	--	--
	SLR-HSS-ULG (Type III, House Side Shield)	Lumens	580	3,833	4,355	5,170	6,023	7,067	7,632
		Lumens per Watt‡	44.6	104.2	103.4	103.4	100.7	95.6	92.2
		BUG Rating	--	--	--	--	--	--	--
	SLL (90° Spill Light Eliminator Left)	Lumens	682	2,417	3,031	3,989	4,992	6,220	6,885
		Lumens per Watt‡	52.5	120.2	119.3	119.8	115.8	108.7	104.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	580	2,055	2,577	3,392	4,245	5,289	5,854
		Lumens per Watt‡	44.6	102.2	101.5	101.9	98.5	92.5	88.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL-ULG (Type III, House Side Shield)	Lumens	682	4,195	4,809	5,767	6,770	7,998	8,663
		Lumens per Watt‡	52.5	114.0	114.2	115.3	113.2	108.2	104.6
		BUG Rating	--	--	--	--	--	--	--
	SLL-HSS-ULG (Type III, House Side Shield)	Lumens	580	3,833	4,355	5,170	6,023	7,067	7,632
		Lumens per Watt‡	44.6	104.2	103.4	103.4	100.7	95.6	92.2
		BUG Rating	--	--	--	--	--	--	--
750 CCT	**T2 (Type II)**	Lumens	768	2,721	3,412	4,490	5,619	7,001	7,749
		Lumens per Watt‡	59.1	135.4	134.3	134.8	130.4	122.4	117.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	584	2,069	2,594	3,414	4,272	5,323	5,892
		Lumens per Watt‡	44.9	102.9	102.1	102.5	99.1	93.1	89.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2	B1-U0-G2
	T3 (Type III)	Lumens	786	2,783	3,490	4,593	5,748	7,162	7,927
		Lumens per Watt‡	60.5	138.5	137.4	137.9	133.4	125.2	119.9
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	593	2,100	2,634	3,466	4,338	5,405	5,982
		Lumens per Watt‡	45.6	104.5	103.7	104.1	100.6	94.5	90.5
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
750 CCT	**T4FT (Type IV Forward Throw)**	Lumens	739	2,617	3,282	4,319	5,406	6,735	7,455
		Lumens per Watt‡	56.8	130.2	129.2	129.7	125.4	117.7	112.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	547	1,936	2,428	3,195	3,999	4,982	5,514
		Lumens per Watt‡	42.1	96.3	95.6	95.9	92.8	87.1	83.4
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4W (Type IV Wide)	Lumens	772	2,733	3,428	4,511	5,646	7,034	7,785
		Lumens per Watt‡	59.4	136.0	135.0	135.5	131.0	123.0	117.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	576	2,039	2,556	3,364	4,210	5,246	5,806
		Lumens per Watt‡	44.3	101.4	100.6	101.0	97.7	91.7	87.8
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL2 (Type II w/Spill Control)	Lumens	762	2,700	3,386	4,456	5,577	6,948	7,690
		Lumens per Watt‡	58.6	134.3	133.3	133.8	129.4	121.5	116.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2
	SL2-HSS (Type II w/Spill Control, House Side Shield)	Lumens	624	2,210	2,771	3,646	4,564	5,686	6,293
		Lumens per Watt‡	48.0	110.0	109.1	109.5	105.9	99.4	95.2
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL3 (Type III w/Spill Control)	Lumens	757	2,682	3,363	4,425	5,539	6,901	7,638
		Lumens per Watt‡	58.2	133.4	132.4	132.9	128.5	120.6	115.6
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SL3-HSS (Type III w/Spill Control, House Side Shield)	Lumens	647	2,290	2,872	3,780	4,731	5,894	6,524
		Lumens per Watt‡	49.8	113.9	113.1	113.5	109.8	103.0	98.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL4 (Type IV w/Spill Control)	Lumens	732	2,592	3,250	4,277	5,353	6,670	7,383
		Lumens per Watt‡	56.3	129.0	128.0	128.4	124.2	116.6	111.7
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SL4-HSS (Type IV w/Spill Control, House Side Shield)	Lumens	633	2,243	2,813	3,701	4,633	5,772	6,389
		Lumens per Watt‡	48.7	111.6	110.7	111.1	107.5	100.9	96.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SLR (90° Spill Light Eliminator Right)	Lumens	682	2,417	3,031	3,989	4,992	6,220	6,885
		Lumens per Watt‡	52.5	120.2	119.3	119.8	115.8	108.7	104.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	580	2,055	2,577	3,392	4,245	5,289	5,854
		Lumens per Watt‡	44.6	102.2	101.5	101.9	98.5	92.5	88.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	SLL (90° Spill Light Eliminator Left)	Lumens	682	2,417	3,031	3,989	4,992	6,220	6,885
		Lumens per Watt‡	52.5	120.2	119.3	119.8	115.8	108.7	104.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	580	2,055	2,577	3,392	4,245	5,289	5,854
		Lumens per Watt‡	44.6	102.2	101.5	101.9	98.5	92.5	88.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
760 CCT	**T2 (Type II)**	Lumens	768	2,721	3,412	4,490	5,619	7,001	7,749
		Lumens per Watt‡	59.1	135.4	134.3	134.8	130.4	122.4	117.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	584	2,069	2,594	3,414	4,272	5,323	5,892
		Lumens per Watt‡	44.9	102.9	102.1	102.5	99.1	93.1	89.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2	B1-U0-G2
	T3 (Type III)	Lumens	786	2,783	3,490	4,593	5,748	7,162	7,927
		Lumens per Watt‡	60.5	138.5	137.4	137.9	133.4	125.2	119.9
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	593	2,100	2,634	3,466	4,338	5,405	5,982
		Lumens per Watt‡	45.6	104.5	103.7	104.1	100.6	94.5	90.5
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T4FT (Type IV Forward Throw)	Lumens	739	2,617	3,282	4,319	5,406	6,735	7,455
		Lumens per Watt‡	56.8	130.2	129.2	129.7	125.4	117.7	112.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	547	1,936	2,428	3,195	3,999	4,982	5,514
		Lumens per Watt‡	42.1	96.3	95.6	95.9	92.8	87.1	83.4
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4W (Type IV Wide)	Lumens	772	2,733	3,428	4,511	5,646	7,034	7,785
		Lumens per Watt‡	59.4	136.0	135.0	135.5	131.0	123.0	117.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	576	2,039	2,556	3,364	4,210	5,246	5,806
		Lumens per Watt‡	44.3	101.4	100.6	101.0	97.7	91.7	87.8
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL2 (Type II w/Spill Control)	Lumens	762	2,700	3,386	4,456	5,577	6,948	7,690
		Lumens per Watt‡	58.6	134.3	133.3	133.8	129.4	121.5	116.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2
	SL2-HSS (Type II w/Spill Control, House Side Shield)	Lumens	624	2,210	2,771	3,646	4,564	5,686	6,293
		Lumens per Watt‡	48.0	110.0	109.1	109.5	105.9	99.4	95.2
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL3 (Type III w/Spill Control)	Lumens	757	2,682	3,363	4,425	5,539	6,901	7,638
		Lumens per Watt‡	58.2	133.4	132.4	132.9	128.5	120.6	115.6
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SL3-HSS (Type III w/Spill Control, House Side Shield)	Lumens	647	2,290	2,872	3,780	4,731	5,894	6,524
		Lumens per Watt‡	49.8	113.9	113.1	113.5	109.8	103.0	98.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL4 (Type IV w/Spill Control)	Lumens	732	2,592	3,250	4,277	5,353	6,670	7,383
		Lumens per Watt‡	56.3	129.0	128.0	128.4	124.2	116.6	111.7
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SL4-HSS (Type IV w/Spill Control, House Side Shield)	Lumens	633	2,243	2,813	3,701	4,633	5,772	6,389
		Lumens per Watt‡	48.7	111.6	110.7	111.1	107.5	100.9	96.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
760 CCT	**SLR (90° Spill Light Eliminator Right)**	Lumens	682	2,417	3,031	3,989	4,992	6,220	6,885
		Lumens per Watt‡	52.5	120.2	119.3	119.8	115.8	108.7	104.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	580	2,055	2,577	3,392	4,245	5,289	5,854
		Lumens per Watt‡	44.6	102.2	101.5	101.9	98.5	92.5	88.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	SLL (90° Spill Light Eliminator Left)	Lumens	682	2,417	3,031	3,989	4,992	6,220	6,885
		Lumens per Watt‡	52.5	120.2	119.3	119.8	115.8	108.7	104.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	580	2,055	2,577	3,392	4,245	5,289	5,854
		Lumens per Watt‡	44.6	102.2	101.5	101.9	98.5	92.5	88.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
827 CCT	**T2 (Type II)**	Lumens	565	2,000	2,508	3,300	4,131	5,147	5,696
		Lumens per Watt‡	43.5	99.5	98.7	99.1	95.8	90.0	86.2
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	429	1,521	1,907	2,509	3,141	3,913	4,331
		Lumens per Watt‡	33.0	75.7	75.1	75.3	72.9	68.4	65.5
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1
	T3 (Type III)	Lumens	578	2,046	2,566	3,376	4,226	5,265	5,825
		Lumens per Watt‡	44.5	101.8	101.0	101.4	98.1	92.0	88.1
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	436	1,544	1,936	2,548	3,189	3,973	4,398
		Lumens per Watt‡	33.5	76.8	76.2	76.5	74.0	69.5	66.5
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	T4FT (Type IV Forward Throw)	Lumens	543	1,924	2,413	3,175	3,974	4,951	5,480
		Lumens per Watt‡	41.8	95.7	95.0	95.3	92.2	86.6	82.9
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	402	1,423	1,785	2,349	2,939	3,662	4,054
		Lumens per Watt‡	30.9	70.8	70.3	70.5	68.2	64.0	61.3
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T4W (Type IV Wide)	Lumens	567	2,009	2,520	3,316	4,150	5,171	5,723
		Lumens per Watt‡	43.6	100.0	99.2	99.6	96.3	90.4	86.6
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	423	1,499	1,879	2,473	3,095	3,856	4,268
		Lumens per Watt‡	32.5	74.6	74.0	74.3	71.8	67.4	64.6
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1
	SL2 (Type II w/Spill Control)	Lumens	560	1,985	2,489	3,275	4,099	5,108	5,653
		Lumens per Watt‡	43.1	98.8	98.0	98.3	95.1	89.3	85.5
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL2-HSS (Type II w/Spill Control, House Side Shield)	Lumens	459	1,624	2,037	2,680	3,355	4,180	4,626
		Lumens per Watt‡	35.3	80.8	80.2	80.5	77.8	73.1	70.0
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
827 CCT	**SL3 (Type III w/Spill Control)**	Lumens	557	1,971	2,472	3,253	4,072	5,073	5,615
		Lumens per Watt‡	42.8	98.1	97.3	97.7	94.5	88.7	84.9
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL3-HSS (Type III w/Spill Control, House Side Shield)	Lumens	475	1,684	2,111	2,779	3,478	4,333	4,796
		Lumens per Watt‡	36.5	83.8	83.1	83.5	80.7	75.8	72.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SL4 (Type IV w/Spill Control)	Lumens	538	1,905	2,389	3,144	3,935	4,903	5,427
		Lumens per Watt‡	41.4	94.8	94.1	94.4	91.3	85.7	82.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL4-HSS (Type IV w/Spill Control, House Side Shield)	Lumens	466	1,649	2,068	2,721	3,406	4,243	4,696
		Lumens per Watt‡	35.8	82.0	81.4	81.7	79.0	74.2	71.0
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2
	SLR (90° Spill Light Eliminator Right)	Lumens	502	1,777	2,228	2,932	3,670	4,572	5,061
		Lumens per Watt‡	38.6	88.4	87.7	88.0	85.2	79.9	76.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	427	1,511	1,895	2,493	3,121	3,888	4,303
		Lumens per Watt‡	32.8	75.2	74.6	74.9	72.4	68.0	65.1
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL (90° Spill Light Eliminator Left)	Lumens	502	1,777	2,228	2,932	3,670	4,572	5,061
		Lumens per Watt‡	38.6	88.4	87.7	88.0	85.2	79.9	76.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	427	1,511	1,895	2,493	3,121	3,888	4,303
		Lumens per Watt‡	32.8	75.2	74.6	74.9	72.4	68.0	65.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
830 CCT	**T2 (Type II)**	Lumens	610	2,162	2,711	3,568	4,465	5,563	6,158
		Lumens per Watt‡	46.9	107.6	106.7	107.1	103.6	97.3	93.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	464	1,644	2,061	2,713	3,395	4,230	4,682
		Lumens per Watt‡	35.7	81.8	81.1	81.5	78.8	74.0	70.8
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1
	T3 (Type III)	Lumens	624	2,212	2,773	3,650	4,568	5,691	6,299
		Lumens per Watt‡	48.0	110.0	109.2	109.6	106.0	99.5	95.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	471	1,669	2,093	2,754	3,447	4,295	4,754
		Lumens per Watt‡	36.2	83.0	82.4	82.7	80.0	75.1	71.9
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	T4FT (Type IV Forward Throw)	Lumens	587	2,080	2,608	3,432	4,296	5,352	5,924
		Lumens per Watt‡	45.2	103.5	102.7	103.1	99.7	93.6	89.6
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	434	1,538	1,929	2,539	3,177	3,959	4,382
		Lumens per Watt‡	33.4	76.5	75.9	76.2	73.7	69.2	66.3
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
830 CCT	**T4W (Type IV Wide)**	Lumens	613	2,172	2,724	3,584	4,486	5,590	6,187
		Lumens per Watt‡	47.2	108.1	107.2	107.6	104.1	97.7	93.6
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	457	1,620	2,032	2,673	3,346	4,169	4,614
		Lumens per Watt‡	35.2	80.6	80.0	80.3	77.6	72.9	69.8
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2
	SL2 (Type II w/Spill Control)1	Lumens	606	2,146	2,691	3,541	4,431	5,521	6,111
		Lumens per Watt‡	46.6	106.8	105.9	106.3	102.8	96.5	92.5
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL2-HSS (Type II w/Spill Control, House Side Shield)	Lumens	496	1,756	2,202	2,898	3,626	4,518	5,001
		Lumens per Watt‡	38.2	87.4	86.7	87.0	84.1	79.0	75.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	SL3 (Type III w/Spill Control)	Lumens	602	2,131	2,672	3,517	4,401	5,484	6,070
		Lumens per Watt‡	46.3	106.0	105.2	105.6	102.1	95.9	91.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL3-HSS (Type III w/Spill Control, House Side Shield)	Lumens	514	1,820	2,282	3,004	3,759	4,684	5,184
		Lumens per Watt‡	39.5	90.5	89.8	90.2	87.2	81.9	78.4
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	SL4 (Type IV w/Spill Control)	Lumens	582	2,060	2,583	3,399	4,254	5,300	5,867
		Lumens per Watt‡	44.8	102.5	101.7	102.1	98.7	92.7	88.8
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL4-HSS (Type IV w/Spill Control, House Side Shield)	Lumens	503	1,782	2,235	2,941	3,681	4,587	5,077
		Lumens per Watt‡	38.7	88.7	88.0	88.3	85.4	80.2	76.8
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2	B1-U0-G2
	SLR (90° Spill Light Eliminator Right)	Lumens	542	1,921	2,409	3,170	3,967	4,943	5,471
		Lumens per Watt‡	41.7	95.6	94.8	95.2	92.0	86.4	82.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	461	1,633	2,048	2,695	3,373	4,203	4,652
		Lumens per Watt‡	35.5	81.2	80.6	80.9	78.3	73.5	70.4
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL (90° Spill Light Eliminator Left)	Lumens	542	1,921	2,409	3,170	3,967	4,943	5,471
		Lumens per Watt‡	42	96	95	95	92	86	83
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	461	1,633	2,048	2,695	3,373	4,203	4,652
		Lumens per Watt‡	35.5	81.2	80.6	80.9	78.3	73.5	70.4
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1

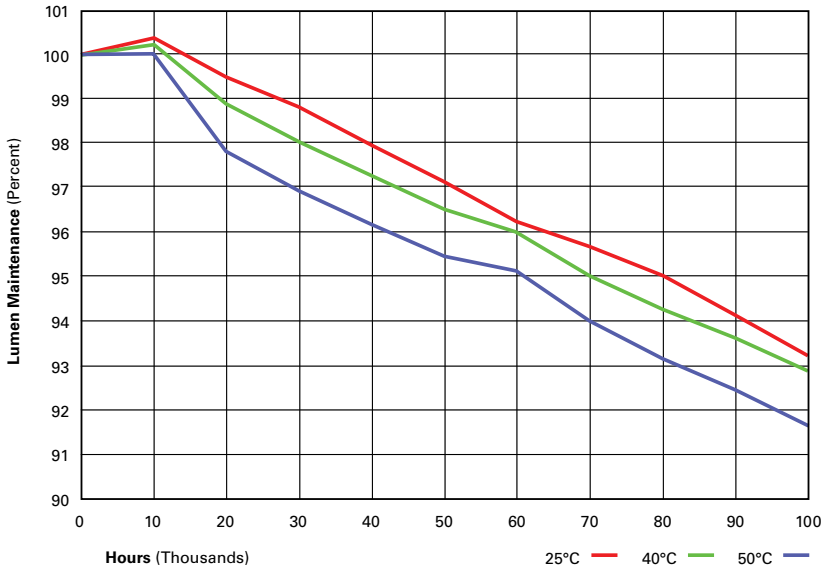
LUMEN MAINTENACE

SA1 (All Drive Currents)					
Hours	**25,000 hours***	**50,000 hours***	**60,000 hours***	**100,000 hours****	**Theoretical L70 (Hours)****
25˚C	99.4%	99.0%	98.9%	98.3%	2,471,000
40˚C	99.4%	99.0%	98.9%	98.3%	2,471,000
50˚C	99.4%	99.0%	98.9%	98.3%	2,471,000

* Supported by IES TM-21 standards
** Theoretical values represent estimations commonly used; however, refer to the IES position on LED Product Lifetime Prediction, IES PS-10-18, that explains proper use of IES TM-21 and LM-80.

LUMEN MULTIPLIER

Ambient Temperature	SA1 (All Drive Currents)
0˚C	1.02
10˚C	1.01
25˚C	1.00
40˚C	0.99
50˚C	0.97



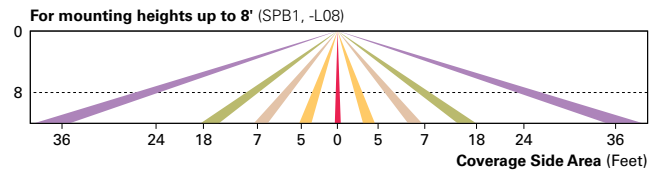
CONTROL OPTIONS

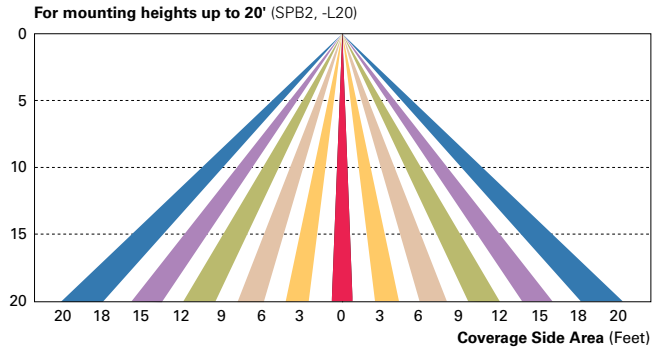
0-10V
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

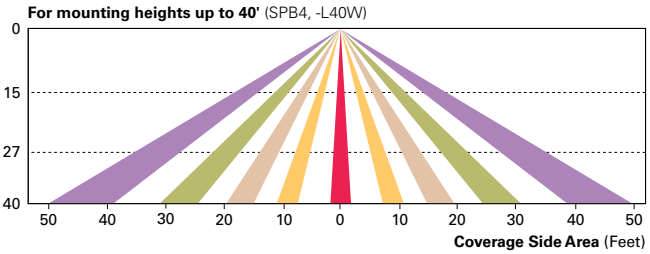
Photocontrol (BPC)
Optional button-type photocontrol (BPC) and photocontrol receptacles (PR and PR7) provide a flexible solution to enable “dusk-to-dawn” lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PR7 receptacle.

After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a “dusk-to-dawn” period has been calculated from the photocontrol input. Specify the desired dimming profile for a simple, factory-shipped dimming solution requiring no external control wiring. Reference the After Hours Dim supplemental guide for additional information.

Dimming Occupancy Sensor (MS/DIM-LXX and MS-LXX)
These sensors are factory installed in the luminaire housing. When the SPB or MS/DIM sensor options are selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when there is no activity detected. When activity is detected, the luminaire returns to full light output. The MS/DIM sensor is factory preset to dim down to approximately 50 percent power with a time delay of five minutes. The MS-LXX sensor is factory preset to turn the luminaire off after five minutes of no activity. SPB motion sensors require the Sensor Configuration mobile application by Wattstopper to change factory default dimming level, time delay, sensitivity and other parameters. Available for iOS and Android devices. The SPB sensor is factory preset to dim down to approximately 10% power with a time delay of five minutes. The MS/DIM occupancy sensors require the FSIR-100 programming tool to adjust factory defaults.



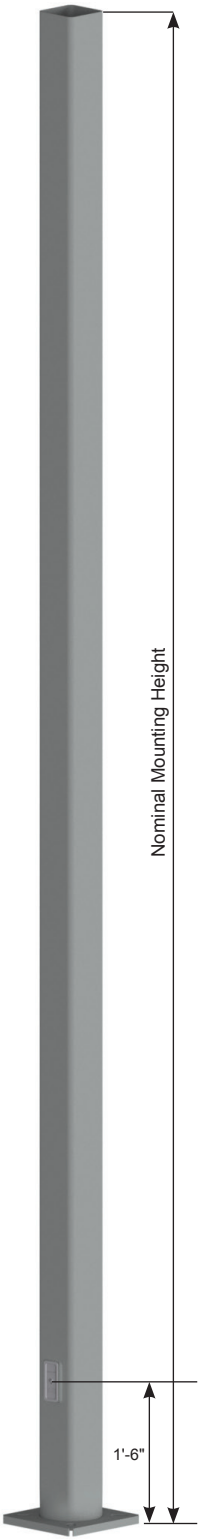




WaveLinx Wireless Control and Monitoring System
Available in 7-PIN or 4-PIN configurations, the WaveLinx Outdoor control platform operates on a wireless mesh network based on IEEE 802.15.4 standards enabling wireless control of outdoor lighting. Use the WaveLinx Mobile application for set-up and configuration. At least one Wireless Area Controller (WAC) is required for full functionality and remote communication (including adjustment of any factory pre-sets). WaveLinx Outdoor Control Module (WOLC-7P-10A) A photocontrol that enables astronomic or time-based schedules to provide ON, OFF and dimming control of fixtures utilizing a 7-PIN receptacle. The out-of-box functionality is ON at dusk and OFF at dawn. WaveLinx Wireless Sensor (SWPD4 and SWPD5) These outdoor sensors offer passive infrared (PIR) occupancy and a photocell for closed loop daylight sensing. These sensors can be factory installed or field-installed via simple, tool-less integration into luminaires equipped with the Zhaga Book 18 compliant 4-PIN receptacle (ZW). These sensors are factory preset to dim down to approximately 50 percent power after 15 minutes of no activity detected. These occupancy sensors include an integral photocell for "dusk-to-dawn" control or daylight harvesting that is factory-enabled. A variety of sensor lenses are available to optimize the coverage pattern for mounting heights from 7'-20', only applies for typical wall packs.

DS330
Fatigue Resistant Soft Square Steel Post

Job Name:	Client Name:
Job Location - City: State:	Created By: Date:
Product: DS330 Quote:	Customer Approval: Date:



Tenon Top*



Pole Cap - Plastic



Cross Section



Soft Square

Handhole



Full Base Cover (Standard)



Dart Square - 2T (Optional)



*Consult factory on loading criteria for pole top mounted luminaires and/or brackets.

SPECIFICATIONS

Pole Shaft - The pole shaft is fabricated from hot rolled welded steel tubing of one-piece construction with a minimum yield strength of 55 KSI.

Pole Top – A removable pole cap is provided for poles receiving drilling patterns for side-mount luminaire arm assemblies. For top mount luminaire and/or bracket consult the factory. Consult the luminaire manufacturer for correct tenon size or drill pattern. Other pole top options include pole cap only (PC) or plain top (PL) which is typical when the pole top diameter matches the necessary slip fit dimensions.

Handhole – A reinforced handhole with grounding provision is provided at 1'-6" from the base end of the pole assembly. Each handhole includes an easy to install, self-contained Swing Latch handhole cover assembly. U.S. Patent Swing Latch cover is fabricated from durable polycarbonate/ABS blend plastic. All pole assemblies are provided with a 2.50" x 5.00" rectangular handhole. Handhole dimensions are nominal.

Base Cover – A two-piece full base cover fabricated from ABS plastic is provided with each pole assembly. Additional base cover options, including the dart square (2T) cast aluminum cover, are available upon request.

Anchor Bolts - Anchor bolts conform to ASTM F1554 Grade 55 and are provided with two hex nuts and two flat washers. Bolts have an “L” bend on one end and are galvanized a minimum of 12" on the threaded end.

Hardware - All structural fasteners are galvanized high strength carbon steel. All non-structural fasteners are galvanized or zinc-plated carbon steel or stainless steel.

Finish - Standard finishes are either Galvanized (GV) or Finish Painted (FP). Additional finish options including Finish Paint over Galvanizing (FPGV) or any of the V-PRO™ Finish Coating Systems are available upon request. See the product ordering code for color options.

Design Criteria - Please reference Design Criteria Specification for appropriate design conditions.

DS330
Fatigue Resistant Soft Square Steel Post

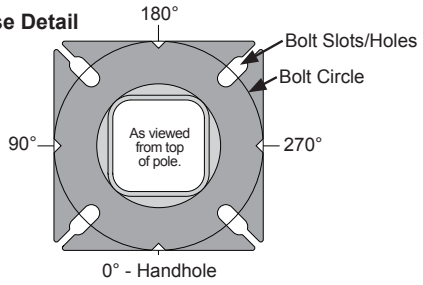
valmont® STRUCTURES

Job Name:	Client Name:
Job Location - City: State:	Created By: Date:
Product: DS330 Quote:	Customer Approval: Date:

ANCHORAGE DATA

POLE		BASE PLATE				ANCHOR BOLTS		
POLE BASE SQUARE (IN)	WALL THK (GA)	BOLT CIRCLE DIA (IN)	BOLT CIRCLE ± (IN)	SQUARE (IN)	THK (IN)	DIA x LENGTH x HOOK (IN)	PROJECTION (IN)	± (IN)
4.00	11	8.50	0.50	8.25	0.750	0.75 x 17.00 x 3.00	3.50	0.25
4.00	7	8.50	0.50	8.25	0.875	0.75 x 17.00 x 3.00	3.63	0.25
5.00	11	11.00	1.00	11.00	1.000	0.75 x 17.00 x 3.00	3.75	0.25
5.00	7	11.00	1.00	11.00	1.000	0.75 x 17.00 x 3.00	3.75	0.25
6.00	7	12.00	1.00	12.50	1.000	1.00 x 36.00 x 4.00	4.25	0.25

Anchor Base Detail



DESIGNATION,LOAD AND DIMENSIONAL DATA

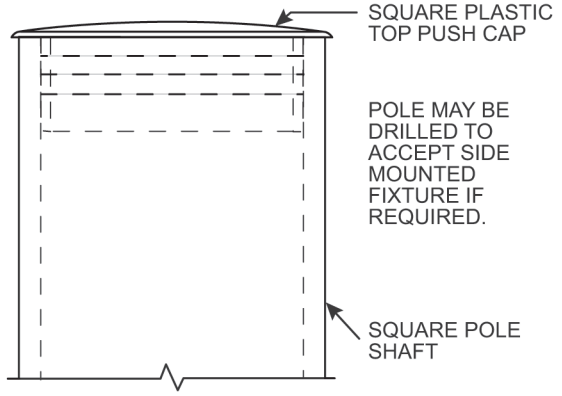
DESIGN INFORMATION							POLE DIMENSIONS[3]				DESIGNATION
	80 MPH w/1.3 GUST		90 MPH w/1.3 GUST		100 MPH w/1.3 GUST						
NOMINAL MOUNTING HEIGHT	MAX EPA[1] (SQ FT)	MAX WEIGHT[1] (LBS)	MAX EPA[1] (SQ FT)	MAX WEIGHT[1] (LBS)	MAX EPA[1] (SQ FT)	MAX WEIGHT[1] (LBS)	SHAFT BASE SQUARE[3] (IN)	SHAFT TOP SQUARE (IN)	WALL THK (GA)	STRUCTURE WEIGHT[2] (LBS)	
10'-0"	30.6	765	23.8	595	18.9	473	4.00	4.00	11	75	400Q100
12'-0"	24.4	610	18.8	470	14.8	370	4.00	4.00	11	90	400Q120
14'-0"	19.9	498	15.1	378	11.7	293	4.00	4.00	11	100	400Q140
16'-0"	15.9	398	11.8	295	8.9	223	4.00	4.00	11	115	400Q160
18'-0"	12.6	315	9.2	230	6.7	168	4.00	4.00	11	125	400Q180
20'-0"	9.6	240	6.7	167	4.5	150	4.00	4.00	11	140	400Q200
	17.7	443	12.7	343	9.4	235	5.00	5.00	11	185	500Q200
	28.1	703	21.4	535	16.2	405	5.00	5.00	7	265	500W200
25'-0"	4.8	150	2.6	100	1.0	50	4.00	4.00	11	170	400Q250
	10.8	270	7.7	188	5.4	135	4.00	4.00	7	245	400W250
	9.8	245	6.3	157	3.7	150	5.00	5.00	11	225	500Q250
	18.5	463	13.3	333	9.5	238	5.00	5.00	7	360	500W250
30'-0"	6.7	168	4.4	110	2.6	65	4.00	4.00	7	291	400W300
	4.7	150	2.0	50	N/A	N/A	5.00	5.00	11	265	500Q300
	10.7	267	6.7	167	3.9	100	5.00	5.00	7	380	500W300
	19.0	475	13.2	330	9.0	225	6.00	6.00	7	520	600W300
35'-0"	5.9	150	2.5	100	N/A	N/A	5.00	5.00	7	440	500W350
	12.4	310	7.6	190	4.2	105	6.00	6.00	7	540	600W350
40'-0"	7.2	180	3.0	75	N/A	N/A	6.00	6.00	7	605	600W400

1. Maximum EPA (Effective Projected Area) and weight values are based on side mounted fixtures only. Consult factory on loading criteria for pole top mounted luminaires and/or brackets. Variations from sizes above are available upon inquiry at the factory. Satisfactory performance of poles is dependent upon the pole being properly attached to a supporting foundation of adequate design.
2. Structure weight is a nominal value which includes the pole shaft and base plate only.
3. Belled-bottom will have reduced thickness due to the cold-working process. However, the belled-bottom meets or exceeds the structural capacity of the original square section. In addition, the rounded section provides better fatigue resistance.

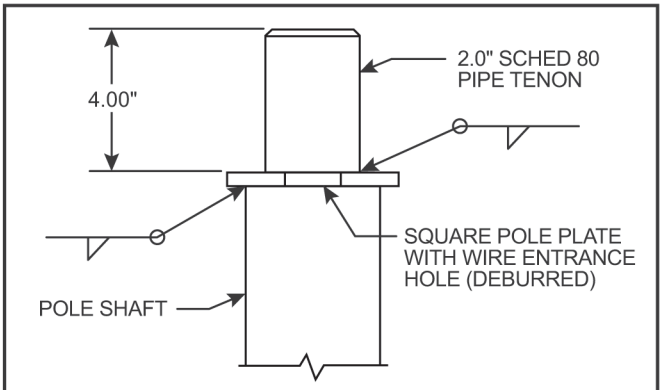
PRODUCT ORDERING CODES

MODEL	DESIGNATION	FIXTURE MOUNTING	FINISH SYSTEM	STANDARD COLOR OPTIONS	BASE COVER	ANCHOR BOLTS	SUPPLEMENTAL INFO
DS330				--	--	--	
	Select Correct Designation from the Load and Dimensional Data Chart.	**Drill Mounting (See Orientation)** D1 = (1) Drilling @ 270° D2 = (2) Drillings @ 90° & 270° D4 = (4) Drillings @ 0°, 90°, 180°, & 270° D5 = (2) Drillings @ 180° & 270° D6 = (3) Drillings @ 90°, 180°, & 270° **Tenon Mounting** P2 = 2.38" OD x 4" tenon P4 = 4.00" OD x 6" tenon P5 = 2.88" OD x 4" tenon P6 = 2.88" OD x 5" tenon P7 = 2.38" OD x 5" tenon P9 = Special Size (Specify) **Other Options** PC = Pole Cap PL = Plain Top (No Cap)	GV = Galvanized FP = Finish Painted **-----OPTIONAL-----** FPGV = Finish Paint over Galvanizing VP30 = V-PRO™ 30 System VP32 = V-PRO™ 32 System VP53 = V-PRO™ 53 System VP54 = V-PRO™ 54 System VP57 = V-PRO™ 57 System VP100 = V-PRO™ 100 System VP105 = V-PRO™ 105 System	GV = Galvanized BK = Black DB = Dark Bronze MB = Medium Bronze WH = White LG = Light Gray CB = Bronze DG = Dark Green ST = Sandstone HTG= Hunter Green SG = Slate Gray SL = Silver SC = Special Color (Specify)	FBC = Full Base Cover **-----OPTIONAL-----** 2T = Square Dart Cover	AB = With Anchor Bolts LAB = Without Anchor Bolts	

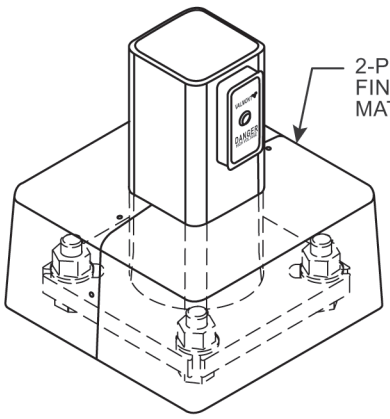
SPC7207 12/17 valmontstructures.com carries the most current spec information and supersedes these guidelines.



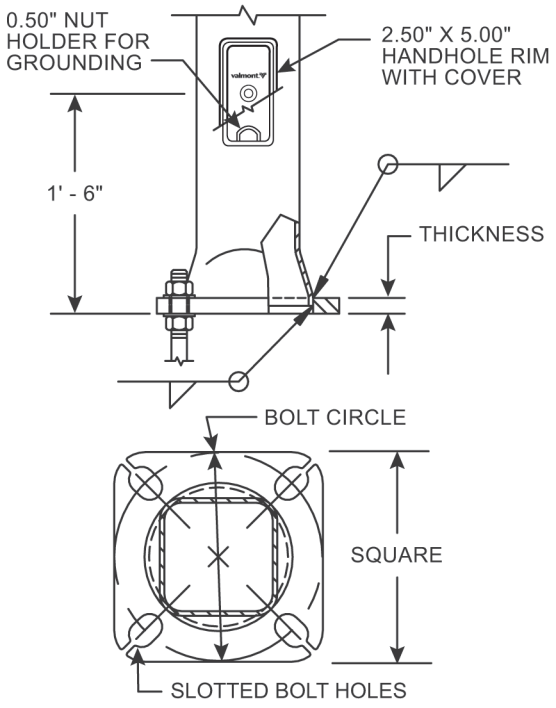
CAP DETAIL (STANDARD)



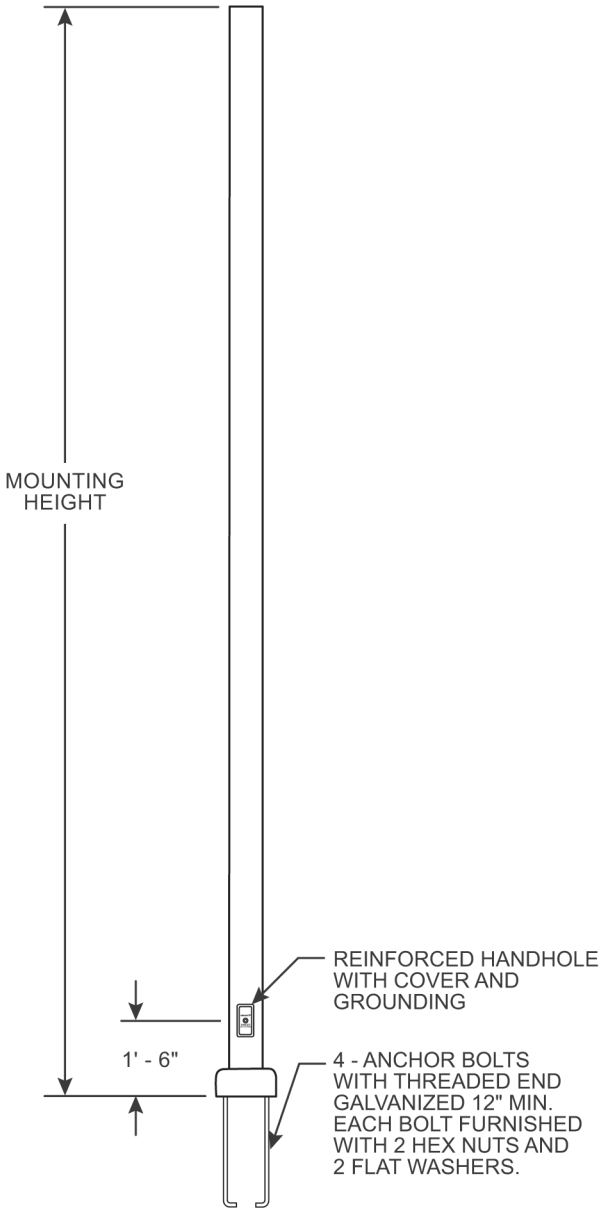
P2 TENON DETAIL (OPTIONAL)



FULL BASE COVER (STANDARD)



POLE BASE AND HANDHOLE DETAIL



DS330 POLE DETAIL

SPC7207 12/17 valmontstructures.com carries the most current spec information and supersedes these guidelines.

M. Calculation of Wastewater Flowrate for 1060 Westbrook Street

The project proposes to develop the parcel into a 120-Room 3-story Hyatt Studios, with a 106-space parking lot, and other site and utility improvements. Based upon the Section 4 of the Maine Subsurface Wastewater Disposal Rules, the project anticipates the following daily flows:

Estimate of Anticipated Daily Flows			
Development	Unit Size	Gallons per Day per Unit	Total Gallons per Day (GPD)
Existing Flow			
Open Space	N/A	N/A	0 GPD
Total Gallons per Day (Existing)			**0 GPD**
Proposed Flow			
Hotel	120 Rooms / 10 Employees	100 GPD/ Room 12 GPD/ Employee	12,120
Total Gallons per Day (Proposed)			**12,120 GPD**
Net Change			**+12,120 GPD**
*Values based on Chapter 241 State of Maine: Subsurface Wastewater Disposal Rules, most recent edition			

The proposed project is anticipated to increase the net flow by approximately 12,120 gallons per day (GPD).

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

Portland Dept. of Public Works -
Water Resources
212 Canco Road
Portland, Maine 04103

Date: _____

Bradley Roland, P.E.
Water Resources Division
Department of Public Works
212 Canco Road
Portland, ME 04103

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

Site Address: 1060 Westbrook Street, Portland, Maine 04102

Chart Block Lot Number: 207/A/12 and 210A/B/7

Proposed Use: Hotel
Previous Use: Open Space / Parking Lots
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.

Westbrook Street (8" PVC)

Site Category

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

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

2. Please, Submit Contact Information.

City Planner's Name: Matthew Grooms Phone: 207-874-8699
Owner/Developer Name: Giri Hotel Management
Owner/Developer Address: 225 W Squantum Street, Suite 202 Quincy, MA 02171
Phone: 508-345-3305 Fax: _____ E-mail: apatel@girihotels.com
Engineering Consultant Name: Acorn Engineering
Engineering Consultant Address: 500 Washington Avenue, Portland, Maine, 04103
Phone: 207-775-2655 Fax: _____ E-mail: pheil@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: 12,120 GPD
Peaking Factor/ Peak Times: Diurnal
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.

N. Lighting

All proposed lighting will be down shaded and dark sky compliant. Please refer to the Photometric Plan and attached cut sheets prepared by Reflex Lighting for additional information.

Calculation Summary						
Label	Units	Avg	Max	Min	Avg/Min	Max/Min
ENTIRE AREA	Fc	0.25	3.4	0.0	N.A.	N.A.
PARKING LOT	Fc	0.92	2.5	0.3	3.07	8.33

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Description	Tag	LLF	Luminaire Lumens	Luminaire Watts	Total Watts
	1	P3A	Single	COOPER: GALN-SA1B-730-U-SL3-CXX	MTD ON 20' VALMONT POLE: DS330-400Q200-D1-FP COOPER CXX-FBC-AB	0.900	5197	44	44
	1	P3B	Single	COOPER: GALN-SA1D-730-U-SL3-CXX	MTD ON 20' VALMONT POLE: DS330-400Q200-D1-FP COOPER CXX-FBC-AB	0.900	7066	65	65
	3	P5-2	Back-Back	COOPER: GALN-SA1B-730-U-SWQ-CXX	MTD ON 20' VALMONT POLE: DS330-400Q200-D2-FP COOPER CXX-FBC-AB	0.900	5486	44	264
	6	W2	Single	COOPER: ENC-SA1A-730-U-SL2-CXX	WALL MTD 12' AFG	0.900	2459	20.1	120.6
	1	W4FT	Single	COOPER: ENC-SA1C-730-U-T4FT-CXX	WALL MTD 12' AFG	0.900	3933	33.3	33.3
	4	W4W	Single	COOPER: ENC-SA1A-730-U-SL4-CXX	WALL MTD 12' AFG	0.900	2361	20.1	80.4

CHARRON REFLEX LIGHTING

#	Date	Comments

Revisions

Drawn By: Michael O'Brien
Checked By:
Date:2/21/2024
Contact: mobrien@charroninc.com
Scale: NTS

1060 Westbrook Street

Portland, ME

Page M of 1

DESCRIPTION

The Entri LED luminaire features a classic and stylish design with the added benefits of solid state lighting technology, offering outstanding uniformity and energy savings. Using Cooper Lighting Solutions' proprietary LED LightSquare technology and AccuLED Optics™ system, the Entri LED luminaire offers designers vast versatility in system design, function and performance. Use Entri LED for wall mount architectural lighting applications and egress lighting requirements. UL/cUL listed for use in wet locations.

Catalog #		**Type**
Project		
Comments		**Date**
Prepared by		

SPECIFICATION FEATURES

Construction

HOUSING: Heavy wall, one-piece, die-cast aluminum construction for precise tolerance control and repeatability in manufacturing. Integral extruded aluminum heat sink provides superior thermal heat transfer in +40°C ambient environments. FACEPLATE / DOOR: One-piece, die-cast aluminum construction. Captive, side hinged faceplate swings open via release of one flush mount die-cast aluminum latch on housing side panel. GASKET: One-piece molded silicone gasket mates perfectly between the door and housing for repeatable seal. LENS: Uplight lens is impact-resistant, 5/32" thick tempered frosted glass sealed to housing with continuous bead silicone gasket. Downlight lens is an LED LightSquare with integral optics sealed for IP66 rating. HARDWARE: Stainless steel mounting screws and latch hardware allow access to electrical components for installation and servicing.

Optics

Choice of 9 patented, high efficiency AccuLED Optics™ distributions. Optics are precisely designed to shape the light output, maximizing efficiency and application spacing. AccuLED Optics technology creates consistent distributions with the scalability to meet customized application requirements. CRI and CCT offering includes 2200K, 2700K, 3000K, 3500K, 4000K, 5000K, and 5700K with minimum 70CRI and 2700K and 3000K with minimum 80CRI all within 5-step MacAdam ellipse.

Electrical

LED drivers mount to die-cast aluminum back housing for optimal heat sinking, operation efficacy, and prolonged life. Standard drivers feature electronic universal voltage (120-277V 50/60Hz), 347V 60Hz or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Greater than 0.9 power factor, less than 20% harmonic distortion, and is suitable for operation in -40°C to 40°C ambient environments and optional 50C construction available. All fixtures are shipped standard with 10kV/10kA common – and differential – mode surge protection. LightSquare feature an IP66 enclosure rating and maintain greater than 98% lumen maintenance at 60,000 hours per IESNA TM-21. Emergency egress options for -20°C ambient environments, WaveLinx™, occupancy sensor, and dimming options available.

Mounting

JUNCTION BOX: Standard with zinc-plated, quick-mount junction box plate that mounts directly to 4" J-Box. LightSquare mounts facing downward. Fixture slides over mounting plate and is secured with two stainless steel fasteners. Mounting plate features a one-piece EPDM gasket on back side of plate to firmly seal fixture to wall surface, forbidding entry of moisture and particulates. Optional mounting arrangements utilize a die-cast mounting adaptor box to allow for LED battery pack, surface conduit and trough branch wiring. The Entri LED luminaire is approved for mounting on combustible surfaces.

Finish

Housing is finished in five-stage super TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. LightSquare cover plates are standard white and may be specified to match finish of luminaire housing. Standard colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available. Consult Outdoor Architectural Colors brochure for a complete selection.

Warranty

Five-year warranty.







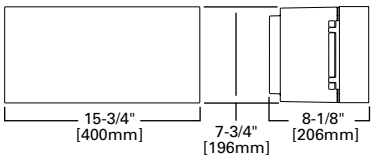
ENC/ENT/ENV
ENTRI LED

LightSquare
Solid State LED

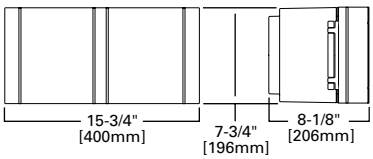
ARCHITECTURAL WALL LUMINAIRE

DIMENSIONS

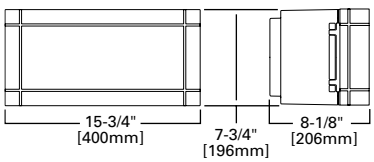
ENC (Round Clean)



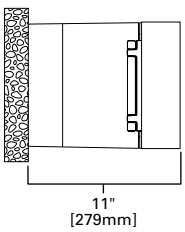
ENT (Triangle Reveals)



ENV (Round Reveals)



CONDUIT MOUNT / BATTERY BACK BOX



CERTIFICATION DATA

DesignLights Consortium® Qualified*
UL/cUL Listed
ISO 9001
IP66 LightSquares
LM79 / LM80 Compliant

ENERGY DATA

Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120-277V/50 & 60Hz, 347V/60Hz, 480V/60Hz
-30°C Minimum Temperature
40°C Ambient Temperature Rating (Optional)

SHIPPING DATA

Approximate Net Weight:
15.2 lbs. (6.9 kgs.) - Without backbox
29.1 lbs. (13.2 kgs.) - With backbox

ORDERING INFORMATION

Sample Number: ENC-SA1C-740-U-T4W-GM-ULG-HA-ZW-SWPD4BK

Domestic Preferences [25]	Product Family [1]	Light Engine		Color Temperature	Voltage	Distribution	Finish
		Configuration	Drive Current				
[Blank]=Standard **BAA**=Buy American Act **TAA**=Trade Agreements Act	**ENC**=Entri Round Clean **ENT**=Entri Triangle Reveals **ENV**=Entri Round Reveals	**SA1**=1 Square	**A**=350mA **B**=450mA **C**=600mA **D**=800mA **E**=1000mA **F**=1200mA	**722**=70CRI, 2200K [3] **727**=70CRI, 2700K [3] **730**=70CRI, 3000K [3] **735**=70CRI, 3500K **740**=70CRI, 4000K **750**=70CRI, 5000K [3] **760**=70CRI, 5700K [3] **827**=80CRI, 2700K [3] **830**=80CRI, 3000K [3] **835**=80CRI, 3500K [3]	**U**=UNV (120-277) **1**=120 **2**=208 **3**=240 **4**=277 **8**=480 **9**=347	**T2**=Type II **T3**=Type III **T4FT**=Type IV Forward Throw **T4W**=Type IV Wide **SL2**=Type II w/Spill Control **SL3**=Type III w/Spill Control **SL4**=Type IV w/Spill Control **SLL**=90° Spill Light Eliminator Left **SLR**=90° Spill Light Eliminator Right	**BZ**=Bronze **AP**=Grey **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White

Options (Add as Suffix)

F=Singled fused (Must specify voltage, fused on single hot leg of 120, 277, or 347)
FF=Doubled fused (Must specify voltage, fused on both hot legs of 208, 240, or 480)
X=Driver Surge Protection (6kV) Only
20K=Series 20kV UL 1449 Surge Protective Device
2L=Two-Circuit Light Engine [24]
DIM=0-10V Dimming Driver [5, 6]
EBP=Battery Pack with Back Box (Must specify voltage, available in 120V or 277V) [2, 4, 9]
CBP=Battery Pack with Back Box, Cold Weather Rated (Must specify voltage, available in 120V or 277V) [2, 4, 10]
CBP-CEC=Battery Pack with Back Box, Cold Weather Rated, CEC compliant (Must specify voltage, available in 120V or 277V) [2, 4, 10]
R90=Rotated Right 90°
L90=Rotated Left 90°
HSS=Factory Installed House Side Shield [16]
LCF=LightSquare Trim Plate Matches Housing Finish [15]
ULG=Uplight Glow [7]
HA=50°C High Ambient [8]
WG=Wire Guard
TR=Tamper Resistant Hardware
BOX=Empty back box (1/2" NPT, each side with plugs installed
BPC=Button Type Photocontrol (Must specify voltage, available in 120, 208, 240, 277V, 347, and 480)
AHD145=After Hours Dim, 5 Hours, 50% [17]
AHD245=After Hours Dim, 6 Hours, 50% [17]
AHD255=After Hours Dim, 7 Hours, 50% [17]
AHD355=After Hours Dim, 8 Hours, 50% [17]
SPB1=Dimming Occupancy Sensor with Bluetooth Interface, <8' Mounting [13, 22]
SPB2=Dimming Occupancy Sensor with Bluetooth Interface, 8'-20' Mounting [13, 22]
SPB4=Dimming Occupancy Sensor with Bluetooth Interface, 21'-40' Mounting [13, 22]
MS-L08=Motion Sensor for ON/OFF Operation, Up to 8' Mounting Height [11, 12, 13]
MS-L20=Motion Sensor for ON/OFF Operation, 9' - 20' Mounting Height [11, 12, 13]
MS/DIM-L08=Motion Sensor for Dimming Operation, Up to 8' Mounting Height [11, 12, 13]
MS/DIM-L20=Motion Sensor for Dimming Operation, 9' - 20' Mounting Height [11, 12, 13]
ZW=WaveLinx-enabled 4-PIN Twistlock Receptacle [19,20]
ZW-SWPD4XX=WaveLinx Pro, Dimming Motion and Daylight, WAC Programmable, 7' - 15' Mounting [19,20,21]
ZW-SWPD5XX=WaveLinx Pro, Dimming Motion and Daylight, WAC Programmable, 15' - 40' Mounting [19,20,21]
CC=Coastal Construction [23]

Accessories (Order Separately) [26]

MA1253=10kV Circuit Module Replacement
MA1253-480V=10kV Circuit Module Replacement (480V only)
FSIR-100-PK=Wireless Configuration Tool for Occupancy Sensor [11]
VA6172SA=Wireguard Accessory
VA6173=Tamper-Resistant Driver Bit
VA6174=Vandal Shield Accessory
VA2001-XX=Thru-Way Conduit Box
LS/HSS=House Side Shield (Works with all distributions listed for Entri)
WOLC-7P-10A=WaveLinx Outdoor Control Module (7-pin)
SWPD4-XX=WaveLinx Sensor, Dimming Motion and Daylight, WAC Programmable, 7' - 15' Mounting [19, 20, 21]
SWPD5-XX=WaveLinx Sensor, Dimming Motion and Daylight, WAC Programmable, 15' - 40' Mounting [19, 20, 21]

NOTES:
1. DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details. DLC Family Code: MMMSPQ
2. EBP or CBP options limited to 25°C. Control option limited to BPC=Button Type Photocontrol (must specify voltage).
3. Extended lead times apply. Use dedicated IES files when performing layouts.
4. Not available with HA option.
5. Cannot be used with other control options.
6. Low voltage control lead brought out 18" outside fixture.
7. ULG only available in 740
8. Not available with ULG option
9. EBP is rated for minimum operating temperature of 0°C (32°F). Operates downlight for 90-minutes.
10. CBP is rated for minimum operating temperature of -20°C (-4°F). Operates downlight for 90-minutes.
11. The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative at Cooper Lighting
12. Replace LXX with the available mounting height options: L08, L20, L40 or L40W are the only choices.
13. Includes integral photosensor.
14. Bronze sensor is shipped with Bronze fixtures. White sensor shipped on all other housing color options.
15. Not available with HSS option.
16. Only for use with SL2, SL3 and SL4 distributions. The light square trim plate is painted black when the HSS option is selected.
17. Requires the use of BPC photocontrol. See After Hours Dim supplemental guide for additional information.
18. Control option limited to BPC=Button Type Photocontrol (must specify voltage).
19. WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed.
20. Requires ZW.
21. Replace XX with sensor color (WH, BZ, or BK).
22. Smart device with mobile application required to change system defaults. See controls section for details.
23. Coastal construction finish salt spray tested to over 5,000-hours per ASTM B117, with a scribe rating of 9 per ASTM D1654.
24. 2L not available with FF, ULG or AHD options. Controls and/or battery packs operate only one of the two circuits when 2L is specified.
25. Only product configurations with these designated prefixes are built to be compliant with the Buy American Act of 1933 (BAA) or Trade Agreements Act of 1979 (TAA), respectively. Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.
26. Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
722 CCT	**T2 (Type II)**	Lumens	565	2,000	2,508	3,300	4,131	5,147	5,696
		Lumens per Watt‡	33.0	99.5	98.7	99.1	95.8	90.0	86.2
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	429	1,521	1,907	2,509	3,141	3,913	4,331
		Lumens per Watt‡	43.5	75.7	75.1	75.3	72.9	68.4	65.5
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1
	T3 (Type III)	Lumens	578	2,046	2,566	3,376	4,226	5,265	5,827
		Lumens per Watt‡	44.5	101.8	101.0	101.4	4,226	92.0	88.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	436	1,544	1,936	2,548	3,189	3,973	4,398
		Lumens per Watt‡	33.5	76.8	76.2	76.5	74.0	69.5	66.5
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	T4FT (Type IV Forward Throw)	Lumens	543	1,924	2,413	3,175	3,974	4,951	5,480
		Lumens per Watt‡	41.8	95.7	95.0	95.3	92.2	86.6	82.9
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	402	1,423	1,785	2,349	2,939	3,662	4,054
		Lumens per Watt‡	30.9	70.8	70.3	70.5	68.2	64.0	61.3
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T4W (Type IV Wide)	Lumens	567	2,009	2,520	3,316	4,150	5,171	5,723
		Lumens per Watt‡	43.6	100.0	99.2	99.6	96.3	90.4	86.6
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	423	1,499	1,879	2,473	3,095	3,856	4,268
		Lumens per Watt‡	32.5	74.6	74.0	74.3	71.8	67.4	64.6
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1
	SL2 (Type II w/ Spill Control)	Lumens	560	1,985	2,489	3,275	4,099	5,108	5,653
		Lumens per Watt‡	43.1	98.8	98.0	98.3	95.1	89.3	85.5
		BUG Rating	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL2-HSS (Type II w/ Spill Control, House Side Shield)	Lumens	459	1,624	2,037	2,680	3,355	4,180	4,626
		Lumens per Watt‡	35.3	80.8	80.2	80.5	77.8	73.1	70.0
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SL3 (Type III w/ Spill Control)	Lumens	557	1,971	2,472	3,253	4,072	5,073	5,615
		Lumens per Watt‡	42.8	98.1	97.3	97.7	94.5	88.7	84.9
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL3-HSS (Type III w/ Spill Control, House Side Shield)	Lumens	475	1,684	2,111	2,779	3,478	4,333	4,796
		Lumens per Watt‡	36.5	83.8	83.1	83.5	80.7	75.8	72.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SL4 (Type IV w/ Spill Control)	Lumens	538	1,905	2,389	3,144	3,935	4,903	5,427
		Lumens per Watt‡	41.4	94.8	94.1	94.4	91.3	85.7	82.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL4-HSS (Type IV w/ Spill Control, House Side Shield)	Lumens	466	1,649	2,068	2,721	3,406	4,243	4,696
		Lumens per Watt‡	35.8	82.0	81.4	81.7	79.0	74.2	71.0
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
722 CCT	**SLR (90° Spill Light Eliminator Right)**	Lumens	502	1,777	2,228	2,932	3,670	4,572	5,061
		Lumens per Watt‡	38.6	88.4	87.7	88.0	85.2	79.9	76.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	427	1,511	1,895	2,493	3,121	3,888	4,303
		Lumens per Watt‡	32.8	75.2	74.6	74.9	72.4	68.0	65.1
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL (90° Spill Light Eliminator Left)	Lumens	502	1,777	2,228	2,932	3,670	4,572	5,061
		Lumens per Watt‡	38.6	88.4	87.7	88.0	85.2	79.9	76.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	427	1,511	1,895	2,493	3,121	3,888	4,303
		Lumens per Watt‡	32.8	75.2	74.6	74.9	72.4	68.0	65.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
727 CCT	**T2 (Type II)**	Lumens	642	2,275	2,853	3,755	4,699	5,855	6,481
		Lumens per Watt‡	49.4	113.2	112.3	112.8	109.0	102.4	98.0
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	488	1,730	2,169	2,855	3,573	4,452	4,927
		Lumens per Watt‡	37.5	86.1	85.4	85.7	82.9	77.8	74.5
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1
	T3 (Type III)	Lumens	657	2,328	2,919	3,841	4,807	5,990	6,630
		Lumens per Watt‡	50.5	115.8	114.9	115.3	111.5	104.7	100.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	496	1,757	2,203	2,899	3,628	4,520	5,003
		Lumens per Watt‡	38.2	87.4	86.7	87.1	84.2	79.0	75.7
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	T4FT (Type IV Forward Throw)	Lumens	618	2,189	2,745	3,612	4,521	5,633	6,234
		Lumens per Watt‡	47.5	108.9	108.1	108.5	104.9	98.5	94.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	457	1,619	2,030	2,672	3,344	4,166	4,612
		Lumens per Watt‡	35.2	80.5	79.9	80.2	77.6	72.8	69.8
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4W (Type IV Wide)	Lumens	645	2,286	2,867	3,772	4,721	5,883	6,511
		Lumens per Watt‡	49.6	113.7	112.9	113.3	109.5	102.8	98.5
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	481	1,705	2,138	2,813	3,521	4,387	4,856
		Lumens per Watt‡	37.0	84.8	84.2	84.5	81.7	76.7	73.5
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2
	SL2 (Type II w/Spill Control)	Lumens	638	2,258	2,832	3,726	4,664	5,811	6,431
		Lumens per Watt‡	49.1	112.3	111.5	111.9	108.2	101.6	97.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL2-HSS (Type II w/Spill Control, House Side Shield)	Lumens	522	1,848	2,317	3,049	3,817	4,755	5,263
		Lumens per Watt‡	40.2	91.9	91.2	91.6	88.6	83.1	79.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
727 CCT	**SL3 (Type III w/Spill Control)**	Lumens	633	2,243	2,813	3,701	4,632	5,771	6,388
		Lumens per Watt‡	48.7	111.6	110.7	111.1	107.5	100.9	96.6
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL3-HSS (Type III w/Spill Control, House Side Shield)	Lumens	541	1,915	2,402	3,161	3,956	4,929	5,456
		Lumens per Watt‡	41.6	95.3	94.6	94.9	91.8	86.2	82.5
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL4 (Type IV w/Spill Control)	Lumens	612	2,168	2,718	3,577	4,477	5,578	6,174
		Lumens per Watt‡	47.1	107.9	107.0	107.4	103.9	97.5	93.4
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SL4-HSS (Type IV w/Spill Control, House Side Shield)	Lumens	530	1,876	2,352	3,096	3,874	4,827	5,343
		Lumens per Watt‡	40.8	93.3	92.6	93.0	89.9	84.4	80.8
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLR (90° Spill Light Eliminator Right)	Lumens	571	2,021	2,535	3,336	4,175	5,202	5,758
		Lumens per Watt‡	43.9	100.5	99.8	100.2	96.9	90.9	87.1
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	485	1,719	2,156	2,837	3,550	4,423	4,896
		Lumens per Watt‡	37.3	85.5	84.9	85.2	82.4	77.3	74.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL (90° Spill Light Eliminator Left)	Lumens	571	2,021	2,535	3,336	4,175	5,202	5,758
		Lumens per Watt‡	43.9	100.5	99.8	100.2	96.9	90.9	87.1
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	485	1,719	2,156	2,837	3,550	4,423	4,896
		Lumens per Watt‡	37.3	85.5	84.9	85.2	82.4	77.3	74.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
730 CCT	**T2 (Type II)**	Lumens	700	2,478	3,107	4,089	5,117	6,376	7,057
		Lumens per Watt‡	53.8	123.3	122.3	122.8	118.7	111.5	106.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	532	1,884	2,362	3,109	3,891	4,848	5,366
		Lumens per Watt‡	40.9	93.7	93.0	93.4	90.3	84.8	81.2
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2
	T3 (Type III)	Lumens	716	2,535	3,179	4,183	5,235	6,523	7,219
		Lumens per Watt‡	55.1	126.1	125.2	125.6	121.5	114.0	109.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	540	1,913	2,399	3,157	3,951	4,922	5,448
		Lumens per Watt‡	41.5	95.2	94.4	94.8	91.7	86.0	82.4
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	T4FT (Type IV Forward Throw)	Lumens	673	2,384	2,989	3,933	4,923	6,134	6,789
		Lumens per Watt‡	51.8	118.6	117.7	118.1	114.2	107.2	102.7
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	498	1,763	2,211	2,910	3,642	4,537	5,022
		Lumens per Watt‡	38.3	87.7	87.0	87.4	84.5	79.3	76.0
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
730 CCT	**T4W (Type IV Wide)**	Lumens	703	2,489	3,122	4,108	5,141	6,406	7,090
		Lumens per Watt‡	54.1	123.8	122.9	123.4	119.3	112.0	107.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	524	1,857	2,328	3,064	3,835	4,778	5,288
		Lumens per Watt‡	40.3	92.4	91.7	92.0	89.0	83.5	80.0
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2	B1-U0-G2
	SL2 (Type II w/Spill Control)	Lumens	694	2,459	3,084	4,058	5,079	6,328	7,004
		Lumens per Watt‡	53.4	122.3	121.4	121.9	117.8	110.6	106.0
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2U0-G2
	SL2-HSS (Type II w/Spill Control, House Side Shield)	Lumens	568	2,012	2,524	3,321	4,156	5,178	5,732
		Lumens per Watt‡	43.7	100.1	99.4	99.7	96.4	90.5	86.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL3 (Type III w/Spill Control)	Lumens	690	2,442	3,063	4,030	5,044	6,285	6,956
		Lumens per Watt‡	53.1	121.5	120.6	121.0	117.0	109.9	105.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SL3-HSS (Type III w/Spill Control, House Side Shield)	Lumens	589	2,086	2,616	3,442	4,308	5,368	5,941
		Lumens per Watt‡	45.3	103.8	103.0	103.4	100.0	93.8	89.9
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL4 (Type IV w/Spill Control)	Lumens	666	2,361	2,960	3,895	4,875	6,074	6,723
		Lumens per Watt‡	51.2	117.5	116.5	117.0	113.1	106.2	101.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SL4-HSS (Type IV w/Spill Control, House Side Shield)	Lumens	577	2,043	2,562	3,371	4,219	5,257	5,818
		Lumens per Watt‡	44.4	101.6	100.9	101.2	97.9	91.9	88.0
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLR (90° Spill Light Eliminator Right)	Lumens	622	2,201	2,761	3,633	4,547	5,665	6,270
		Lumens per Watt‡	47.8	109.5	108.7	109.1	105.5	99.0	94.9
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	529	1,872	2,347	3,089	3,866	4,817	5,331
		Lumens per Watt‡	40.7	93.1	92.4	92.8	89.7	84.2	80.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL (90° Spill Light Eliminator Left)	Lumens	622	2,201	2,761	3,633	4,547	5,665	6,270
		Lumens per Watt‡	47.8	109.5	108.7	109.1	105.5	99.0	94.9
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	529	1,872	2,347	3,089	3,866	4,817	5,331
		Lumens per Watt‡	40.7	93.1	92.4	92.8	89.7	84.2	80.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
735 CCT	**T2 (Type II)**	Lumens	722	2,556	3,205	4,218	5,279	6,577	7,279
		Lumens per Watt‡	55.5	127.2	126.2	126.7	122.5	115.0	110.1
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	549	1,943	2,437	3,207	4,013	5,000	5,535
		Lumens per Watt‡	42.2	96.7	95.9	96.3	93.1	87.4	83.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
735 CCT	**T3 (Type III)**	Lumens	738	2,614	3,279	4,314	5,400	6,728	7,447
		Lumens per Watt‡	56.8	130.0	129.1	129.5	125.3	117.6	112.7
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	557	1,973	2,474	3,256	4,075	5,077	5,620
		Lumens per Watt‡	42.8	98.2	97.4	97.8	94.5	88.8	85.0
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T4FT (Type IV Forward Throw)	Lumens	694	2,459	3,083	4,057	5,078	6,327	7,003
		Lumens per Watt‡	53.4	122.3	121.4	121.8	117.8	110.6	105.9
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	514	1,819	2,281	3,001	3,756	4,680	5,180
		Lumens per Watt‡	39.5	90.5	89.8	90.1	87.1	81.8	78.4
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4W (Type IV Wide)	Lumens	725	2,568	3,220	4,237	5,303	6,608	7,314
		Lumens per Watt‡	55.8	127.8	126.8	127.2	123.0	115.5	110.7
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	541	1,915	2,402	3,160	3,955	4,928	5,455
		Lumens per Watt‡	41.6	95.3	94.6	94.9	91.8	86.2	82.5
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL2 (Type II w/Spill Control)	Lumens	716	2,536	3,181	4,186	5,239	6,527	7,224
		Lumens per Watt‡	55.1	126.2	125.2	125.7	121.6	114.1	109.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2
	SL2-HSS (Type II w/Spill Control, House Side Shield)	Lumens	586	2,076	2,603	3,425	4,287	5,341	5,912
		Lumens per Watt‡	45.1	103.3	102.5	102.9	99.5	93.4	89.4
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL3 (Type III w/Spill Control)	Lumens	711	2,519	3,159	4,157	5,203	6,483	7,175
		Lumens per Watt‡	54.7	125.3	124.4	124.8	120.7	113.3	108.5
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SL3-HSS (Type III w/Spill Control, House Side Shield)	Lumens	608	2,152	2,698	3,551	4,444	5,537	6,128
		Lumens per Watt‡	46.8	107.1	106.2	106.6	103.1	96.8	92.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL4 (Type IV w/Spill Control)	Lumens	687	2,435	3,053	4,018	5,029	6,266	6,935
		Lumens per Watt‡	52.8	121.1	120.2	120.7	116.7	109.5	104.9
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SL4-HSS (Type IV w/Spill Control, House Side Shield)	Lumens	595	2,107	2,642	3,477	4,352	5,422	6,001
		Lumens per Watt‡	45.8	104.8	104.0	104.4	101.0	94.8	90.8
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SLR (90° Spill Light Eliminator Right)	Lumens	641	2,271	2,847	3,747	4,690	5,843	6,467
		Lumens per Watt‡	49.3	113.0	112.1	112.5	108.8	102.2	97.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	545	1,931	2,421	3,186	3,988	4,968	5,499
		Lumens per Watt‡	41.9	96.1	95.3	95.7	92.5	86.9	83.2
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
735 CCT	**SLL (90° Spill Light Eliminator Left)**	Lumens	641	2,271	2,847	3,747	4,690	5,843	6,467
		Lumens per Watt‡	49.3	113.0	112.1	112.5	108.8	102.2	97.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	545	1,931	2,421	3,186	3,988	4,968	5,499
		Lumens per Watt‡	41.9	96.1	95.3	95.7	92.5	86.9	83.2
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
740 CCT	**T2 (Type II)**	Lumens	768	2,721	3,412	4,490	5,619	7,001	7,749
		Lumens per Watt‡	59.1	135.4	134.3	134.8	130.4	122.4	117.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	584	2,069	2,594	3,414	4,272	5,323	5,892
		Lumens per Watt‡	44.9	102.9	102.1	102.5	99.1	93.1	89.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2	B1-U0-G2
	T2-ULG (Type III, House Side Shield)	Lumens	768	4,499	5,190	6,268	7,397	8,779	9,527
		Lumens per Watt‡	59.1	122.3	123.3	125.4	123.7	118.8	115.1
		BUG Rating	--	--	--	--	--	--	--
	T2-HSS-ULG (Type III, House Side Shield)	Lumens	584	3,847	4,372	5,192	6,050	7,101	7,670
		Lumens per Watt‡	44.9	104.5	103.8	103.8	101.2	96.1	92.6
		BUG Rating	--	--	--	--	--	--	--
	T3 (Type III)	Lumens	786	2,783	3,490	4,593	5,748	7,162	7,927
		Lumens per Watt‡	60.5	138.5	137.4	137.9	133.4	125.2	119.9
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	593	2,100	2,634	3,466	4,338	5,405	5,982
		Lumens per Watt‡	45.6	104.5	103.7	104.1	100.6	94.5	90.5
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T3-ULG (Type III, House Side Shield)	Lumens	786	4,561	5,268	6,371	7,526	8,940	9,705
		Lumens per Watt‡	60.5	123.9	125.1	127.4	125.9	121.0	117.2
		BUG Rating	--	--	--	--	--	--	--
	T3-HSS-ULG (Type III, House Side Shield)	Lumens	593	3,878	4,412	5,244	6,116	7,183	7,760
		Lumens per Watt‡	45.6	105.4	104.8	104.9	102.3	97.2	93.7
		BUG Rating	--	--	--	--	--	--	--
	T4FT (Type IV Forward Throw)	Lumens	739	2,617	3,282	4,319	5,406	6,735	7,455
		Lumens per Watt‡	56.8	130.2	129.2	129.7	125.4	117.7	112.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	547	1,936	2,428	3,195	3,999	4,982	5,514
		Lumens per Watt‡	42.1	96.3	95.6	95.9	92.8	87.1	83.4
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4FT-ULG (Type III, House Side Shield)	Lumens	739	4,395	5,060	6,097	7,184	8,513	9,233
		Lumens per Watt‡	56.8	119.4	120.2	121.9	120.1	115.2	111.5
		BUG Rating	--	--	--	--	--	--	--
	T4FT-HSS-ULG (Type III, House Side Shield)	Lumens	547	3,714	4,206	4,973	5,777	6,760	7,292
		Lumens per Watt‡	42.1	100.9	99.9	99.5	96.6	91.5	88.1
		BUG Rating	--	--	--	--	--	--	--

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
740 CCT	**T4W (Type IV Wide)**	Lumens	772	2,733	3,428	4,511	5,646	7,034	7,785
		Lumens per Watt‡	59.4	136.0	135.0	135.5	131.0	123.0	117.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	576	2,039	2,556	3,364	4,210	5,246	5,806
		Lumens per Watt‡	44.3	101.4	100.6	101.0	97.7	91.7	87.8
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4W-ULG (Type III, House Side Shield)	Lumens	772	4,511	5,206	6,289	7,424	8,812	9,563
		Lumens per Watt‡	59.4	122.6	123.7	125.8	124.1	119.2	115.5
		BUG Rating	--	--	--	--	--	--	--
	T4W-HSS-ULG (Type III, House Side Shield)	Lumens	576	3,817	4,334	5,142	5,988	7,024	7,584
		Lumens per Watt‡	44.3	103.7	102.9	102.8	100.1	95.0	91.6
		BUG Rating	--	--	--	--	--	--	--
	SL2 (Type II w/Spill Control)	Lumens	762	2,700	3,386	4,456	5,577	6,948	7,690
		Lumens per Watt‡	58.6	134.3	133.3	133.8	129.4	121.5	116.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2
	"SL2-HSS (Type II w/Spill Control, House Side Shield)	Lumens	624	2,210	2,771	3,646	4,564	5,686	6,293
		Lumens per Watt‡	48.0	110.0	109.1	109.5	105.9	99.4	95.2
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	"SL2-ULG (Type III, House Side Shield)"	Lumens	762	4,478	5,164	6,234	7,355	8,726	9,468
		Lumens per Watt‡	58.6	121.7	122.7	124.7	123.0	118.1	114.3
		BUG Rating	--	--	--	--	--	--	--
	"SL2-HSS-ULG (Type III, House Side Shield)"	Lumens	624	3,988	4,549	5,424	6,342	7,464	8,071
		Lumens per Watt‡	48.0	108.4	108.1	108.5	106.1	101.0	97.5
		BUG Rating	--	--	--	--	--	--	--
	"SL3 (Type III w/Spill Control)"	Lumens	757	2,682	3,363	4,425	5,539	6,901	7,638
		Lumens per Watt‡	58.2	133.4	132.4	132.9	128.5	120.6	115.6
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	"SL3-HSS (Type III w/Spill Control, House Side Shield)"	Lumens	647	2,290	2,872	3,780	4,731	5,894	6,524
		Lumens per Watt‡	49.8	113.9	113.1	113.5	109.8	103.0	98.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	"SL3-ULG (Type III, House Side Shield)"	Lumens	757	4,460	5,141	6,203	7,317	8,679	9,416
		Lumens per Watt‡	58.2	121.2	122.1	124.1	122.4	117.4	113.7
		BUG Rating	--	--	--	--	--	--	--
	"SL3-HSS-ULG (Type III, House Side Shield)"	Lumens	647	4,068	4,650	5,558	6,509	7,672	8,302
		Lumens per Watt‡	49.8	110.5	110.5	111.2	108.8	103.8	100.3
		BUG Rating	--	--	--	--	--	--	--
	"SL4 (Type IV w/Spill Control)"	Lumens	732	2,592	3,250	4,277	5,353	6,670	7,383
		Lumens per Watt‡	56.3	129.0	128.0	128.4	124.2	116.6	111.7
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	"SL4-HSS (Type IV w/Spill Control, House Side Shield)"	Lumens	633	2,243	2,813	3,701	4,633	5,772	6,389
		Lumens per Watt‡	48.7	111.6	110.7	111.1	107.5	100.9	96.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
740 CCT	**SL4-ULG (Type III, House Side Shield)**	Lumens	732	4,370	5,028	6,055	7,131	8,448	9,161
		Lumens per Watt‡	56.3	118.8	119.4	121.1	119.2	114.3	110.6
		BUG Rating	--	--	--	--	--	--	--
	SL4-HSS-ULG (Type III, House Side Shield)	Lumens	633	4,021	4,591	5,479	6,411	7,550	8,167
		Lumens per Watt‡	48.7	109.3	109.0	109.6	107.2	102.2	98.6
		BUG Rating	--	--	--	--	--	--	--
	SLR (90° Spill Light Eliminator Right)	Lumens	682	2,417	3,031	3,989	4,992	6,220	6,885
		Lumens per Watt‡	52.5	120.2	119.3	119.8	115.8	108.7	104.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	580	2,055	2,577	3,392	4,245	5,289	5,854
		Lumens per Watt‡	44.6	102.2	101.5	101.9	98.5	92.5	88.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	SLR-ULG (Type III, House Side Shield)	Lumens	682	4,195	4,809	5,767	6,770	7,998	8,663
		Lumens per Watt‡	52.5	114.0	114.2	115.3	113.2	108.2	104.6
		BUG Rating	--	--	--	--	--	--	--
	SLR-HSS-ULG (Type III, House Side Shield)	Lumens	580	3,833	4,355	5,170	6,023	7,067	7,632
		Lumens per Watt‡	44.6	104.2	103.4	103.4	100.7	95.6	92.2
		BUG Rating	--	--	--	--	--	--	--
	SLL (90° Spill Light Eliminator Left)	Lumens	682	2,417	3,031	3,989	4,992	6,220	6,885
		Lumens per Watt‡	52.5	120.2	119.3	119.8	115.8	108.7	104.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	580	2,055	2,577	3,392	4,245	5,289	5,854
		Lumens per Watt‡	44.6	102.2	101.5	101.9	98.5	92.5	88.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL-ULG (Type III, House Side Shield)	Lumens	682	4,195	4,809	5,767	6,770	7,998	8,663
		Lumens per Watt‡	52.5	114.0	114.2	115.3	113.2	108.2	104.6
		BUG Rating	--	--	--	--	--	--	--
	SLL-HSS-ULG (Type III, House Side Shield)	Lumens	580	3,833	4,355	5,170	6,023	7,067	7,632
		Lumens per Watt‡	44.6	104.2	103.4	103.4	100.7	95.6	92.2
		BUG Rating	--	--	--	--	--	--	--
750 CCT	**T2 (Type II)**	Lumens	768	2,721	3,412	4,490	5,619	7,001	7,749
		Lumens per Watt‡	59.1	135.4	134.3	134.8	130.4	122.4	117.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	584	2,069	2,594	3,414	4,272	5,323	5,892
		Lumens per Watt‡	44.9	102.9	102.1	102.5	99.1	93.1	89.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2	B1-U0-G2
	T3 (Type III)	Lumens	786	2,783	3,490	4,593	5,748	7,162	7,927
		Lumens per Watt‡	60.5	138.5	137.4	137.9	133.4	125.2	119.9
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	593	2,100	2,634	3,466	4,338	5,405	5,982
		Lumens per Watt‡	45.6	104.5	103.7	104.1	100.6	94.5	90.5
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
750 CCT	**T4FT (Type IV Forward Throw)**	Lumens	739	2,617	3,282	4,319	5,406	6,735	7,455
		Lumens per Watt‡	56.8	130.2	129.2	129.7	125.4	117.7	112.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	547	1,936	2,428	3,195	3,999	4,982	5,514
		Lumens per Watt‡	42.1	96.3	95.6	95.9	92.8	87.1	83.4
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4W (Type IV Wide)	Lumens	772	2,733	3,428	4,511	5,646	7,034	7,785
		Lumens per Watt‡	59.4	136.0	135.0	135.5	131.0	123.0	117.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	576	2,039	2,556	3,364	4,210	5,246	5,806
		Lumens per Watt‡	44.3	101.4	100.6	101.0	97.7	91.7	87.8
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL2 (Type II w/Spill Control)	Lumens	762	2,700	3,386	4,456	5,577	6,948	7,690
		Lumens per Watt‡	58.6	134.3	133.3	133.8	129.4	121.5	116.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2
	SL2-HSS (Type II w/Spill Control, House Side Shield)	Lumens	624	2,210	2,771	3,646	4,564	5,686	6,293
		Lumens per Watt‡	48.0	110.0	109.1	109.5	105.9	99.4	95.2
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL3 (Type III w/Spill Control)	Lumens	757	2,682	3,363	4,425	5,539	6,901	7,638
		Lumens per Watt‡	58.2	133.4	132.4	132.9	128.5	120.6	115.6
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SL3-HSS (Type III w/Spill Control, House Side Shield)	Lumens	647	2,290	2,872	3,780	4,731	5,894	6,524
		Lumens per Watt‡	49.8	113.9	113.1	113.5	109.8	103.0	98.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL4 (Type IV w/Spill Control)	Lumens	732	2,592	3,250	4,277	5,353	6,670	7,383
		Lumens per Watt‡	56.3	129.0	128.0	128.4	124.2	116.6	111.7
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SL4-HSS (Type IV w/Spill Control, House Side Shield)	Lumens	633	2,243	2,813	3,701	4,633	5,772	6,389
		Lumens per Watt‡	48.7	111.6	110.7	111.1	107.5	100.9	96.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SLR (90° Spill Light Eliminator Right)	Lumens	682	2,417	3,031	3,989	4,992	6,220	6,885
		Lumens per Watt‡	52.5	120.2	119.3	119.8	115.8	108.7	104.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	580	2,055	2,577	3,392	4,245	5,289	5,854
		Lumens per Watt‡	44.6	102.2	101.5	101.9	98.5	92.5	88.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	SLL (90° Spill Light Eliminator Left)	Lumens	682	2,417	3,031	3,989	4,992	6,220	6,885
		Lumens per Watt‡	52.5	120.2	119.3	119.8	115.8	108.7	104.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	580	2,055	2,577	3,392	4,245	5,289	5,854
		Lumens per Watt‡	44.6	102.2	101.5	101.9	98.5	92.5	88.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
760 CCT	**T2 (Type II)**	Lumens	768	2,721	3,412	4,490	5,619	7,001	7,749
		Lumens per Watt‡	59.1	135.4	134.3	134.8	130.4	122.4	117.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	584	2,069	2,594	3,414	4,272	5,323	5,892
		Lumens per Watt‡	44.9	102.9	102.1	102.5	99.1	93.1	89.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2	B1-U0-G2
	T3 (Type III)	Lumens	786	2,783	3,490	4,593	5,748	7,162	7,927
		Lumens per Watt‡	60.5	138.5	137.4	137.9	133.4	125.2	119.9
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	593	2,100	2,634	3,466	4,338	5,405	5,982
		Lumens per Watt‡	45.6	104.5	103.7	104.1	100.6	94.5	90.5
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T4FT (Type IV Forward Throw)	Lumens	739	2,617	3,282	4,319	5,406	6,735	7,455
		Lumens per Watt‡	56.8	130.2	129.2	129.7	125.4	117.7	112.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	547	1,936	2,428	3,195	3,999	4,982	5,514
		Lumens per Watt‡	42.1	96.3	95.6	95.9	92.8	87.1	83.4
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4W (Type IV Wide)	Lumens	772	2,733	3,428	4,511	5,646	7,034	7,785
		Lumens per Watt‡	59.4	136.0	135.0	135.5	131.0	123.0	117.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	576	2,039	2,556	3,364	4,210	5,246	5,806
		Lumens per Watt‡	44.3	101.4	100.6	101.0	97.7	91.7	87.8
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL2 (Type II w/Spill Control)	Lumens	762	2,700	3,386	4,456	5,577	6,948	7,690
		Lumens per Watt‡	58.6	134.3	133.3	133.8	129.4	121.5	116.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2
	SL2-HSS (Type II w/Spill Control, House Side Shield)	Lumens	624	2,210	2,771	3,646	4,564	5,686	6,293
		Lumens per Watt‡	48.0	110.0	109.1	109.5	105.9	99.4	95.2
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL3 (Type III w/Spill Control)	Lumens	757	2,682	3,363	4,425	5,539	6,901	7,638
		Lumens per Watt‡	58.2	133.4	132.4	132.9	128.5	120.6	115.6
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SL3-HSS (Type III w/Spill Control, House Side Shield)	Lumens	647	2,290	2,872	3,780	4,731	5,894	6,524
		Lumens per Watt‡	49.8	113.9	113.1	113.5	109.8	103.0	98.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL4 (Type IV w/Spill Control)	Lumens	732	2,592	3,250	4,277	5,353	6,670	7,383
		Lumens per Watt‡	56.3	129.0	128.0	128.4	124.2	116.6	111.7
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2
	SL4-HSS (Type IV w/Spill Control, House Side Shield)	Lumens	633	2,243	2,813	3,701	4,633	5,772	6,389
		Lumens per Watt‡	48.7	111.6	110.7	111.1	107.5	100.9	96.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
760 CCT	**SLR (90° Spill Light Eliminator Right)**	Lumens	682	2,417	3,031	3,989	4,992	6,220	6,885
		Lumens per Watt‡	52.5	120.2	119.3	119.8	115.8	108.7	104.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	580	2,055	2,577	3,392	4,245	5,289	5,854
		Lumens per Watt‡	44.6	102.2	101.5	101.9	98.5	92.5	88.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	SLL (90° Spill Light Eliminator Left)	Lumens	682	2,417	3,031	3,989	4,992	6,220	6,885
		Lumens per Watt‡	52.5	120.2	119.3	119.8	115.8	108.7	104.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	580	2,055	2,577	3,392	4,245	5,289	5,854
		Lumens per Watt‡	44.6	102.2	101.5	101.9	98.5	92.5	88.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
827 CCT	**T2 (Type II)**	Lumens	565	2,000	2,508	3,300	4,131	5,147	5,696
		Lumens per Watt‡	43.5	99.5	98.7	99.1	95.8	90.0	86.2
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	429	1,521	1,907	2,509	3,141	3,913	4,331
		Lumens per Watt‡	33.0	75.7	75.1	75.3	72.9	68.4	65.5
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1
	T3 (Type III)	Lumens	578	2,046	2,566	3,376	4,226	5,265	5,825
		Lumens per Watt‡	44.5	101.8	101.0	101.4	98.1	92.0	88.1
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	436	1,544	1,936	2,548	3,189	3,973	4,398
		Lumens per Watt‡	33.5	76.8	76.2	76.5	74.0	69.5	66.5
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	T4FT (Type IV Forward Throw)	Lumens	543	1,924	2,413	3,175	3,974	4,951	5,480
		Lumens per Watt‡	41.8	95.7	95.0	95.3	92.2	86.6	82.9
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	402	1,423	1,785	2,349	2,939	3,662	4,054
		Lumens per Watt‡	30.9	70.8	70.3	70.5	68.2	64.0	61.3
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	T4W (Type IV Wide)	Lumens	567	2,009	2,520	3,316	4,150	5,171	5,723
		Lumens per Watt‡	43.6	100.0	99.2	99.6	96.3	90.4	86.6
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	423	1,499	1,879	2,473	3,095	3,856	4,268
		Lumens per Watt‡	32.5	74.6	74.0	74.3	71.8	67.4	64.6
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1
	SL2 (Type II w/Spill Control)	Lumens	560	1,985	2,489	3,275	4,099	5,108	5,653
		Lumens per Watt‡	43.1	98.8	98.0	98.3	95.1	89.3	85.5
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL2-HSS (Type II w/Spill Control, House Side Shield)	Lumens	459	1,624	2,037	2,680	3,355	4,180	4,626
		Lumens per Watt‡	35.3	80.8	80.2	80.5	77.8	73.1	70.0
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
827 CCT	**SL3 (Type III w/Spill Control)**	Lumens	557	1,971	2,472	3,253	4,072	5,073	5,615
		Lumens per Watt‡	42.8	98.1	97.3	97.7	94.5	88.7	84.9
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL3-HSS (Type III w/Spill Control, House Side Shield)	Lumens	475	1,684	2,111	2,779	3,478	4,333	4,796
		Lumens per Watt‡	36.5	83.8	83.1	83.5	80.7	75.8	72.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SL4 (Type IV w/Spill Control)	Lumens	538	1,905	2,389	3,144	3,935	4,903	5,427
		Lumens per Watt‡	41.4	94.8	94.1	94.4	91.3	85.7	82.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL4-HSS (Type IV w/Spill Control, House Side Shield)	Lumens	466	1,649	2,068	2,721	3,406	4,243	4,696
		Lumens per Watt‡	35.8	82.0	81.4	81.7	79.0	74.2	71.0
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2
	SLR (90° Spill Light Eliminator Right)	Lumens	502	1,777	2,228	2,932	3,670	4,572	5,061
		Lumens per Watt‡	38.6	88.4	87.7	88.0	85.2	79.9	76.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	427	1,511	1,895	2,493	3,121	3,888	4,303
		Lumens per Watt‡	32.8	75.2	74.6	74.9	72.4	68.0	65.1
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL (90° Spill Light Eliminator Left)	Lumens	502	1,777	2,228	2,932	3,670	4,572	5,061
		Lumens per Watt‡	38.6	88.4	87.7	88.0	85.2	79.9	76.6
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	427	1,511	1,895	2,493	3,121	3,888	4,303
		Lumens per Watt‡	32.8	75.2	74.6	74.9	72.4	68.0	65.1
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
830 CCT	**T2 (Type II)**	Lumens	610	2,162	2,711	3,568	4,465	5,563	6,158
		Lumens per Watt‡	46.9	107.6	106.7	107.1	103.6	97.3	93.2
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T2-HSS (Type II, House Side Shield)	Lumens	464	1,644	2,061	2,713	3,395	4,230	4,682
		Lumens per Watt‡	35.7	81.8	81.1	81.5	78.8	74.0	70.8
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1
	T3 (Type III)	Lumens	624	2,212	2,773	3,650	4,568	5,691	6,299
		Lumens per Watt‡	48.0	110.0	109.2	109.6	106.0	99.5	95.3
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T3-HSS (Type III, House Side Shield)	Lumens	471	1,669	2,093	2,754	3,447	4,295	4,754
		Lumens per Watt‡	36.2	83.0	82.4	82.7	80.0	75.1	71.9
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	T4FT (Type IV Forward Throw)	Lumens	587	2,080	2,608	3,432	4,296	5,352	5,924
		Lumens per Watt‡	45.2	103.5	102.7	103.1	99.7	93.6	89.6
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4FT-HSS (Type IV Forward Throw, House Side Shield)	Lumens	434	1,538	1,929	2,539	3,177	3,959	4,382
		Lumens per Watt‡	33.4	76.5	75.9	76.2	73.7	69.2	66.3
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2

POWER AND LUMENS

1 LightSquare (SA Series)			**ENC (Entri - Round Clean) / ENT (Entri - Triangle Reveals) / ENV (Entri - Round Reveals)**						
Drive Current (mA)			EBP / CBP	SA1A (350mA)	SA1B (450mA)	SA1C (600mA)	SA1D (800mA)	SA1E (1000mA)	SA1F (1200mA)
Power (Watts)		120-277V±	13	20.1	25.4	33.3	43.1	57.2	66.1
Current (A)		120V	--	0.17	0.22	0.29	0.38	0.48	0.56
		277V	--	0.09	0.1	0.13	0.17	0.21	0.25
Power (Watts)		347V or 480V	--	23.3	28.7	36.6	49.5	60.7	70.1
Current (A)		347V	--	0.07	0.08	0.11	0.15	0.18	0.21
		480V	--	0.05	0.06	0.08	0.11	0.13	0.16
Optics									
830 CCT	**T4W (Type IV Wide)**	Lumens	613	2,172	2,724	3,584	4,486	5,590	6,187
		Lumens per Watt‡	47.2	108.1	107.2	107.6	104.1	97.7	93.6
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	T4W-HSS (Type IV Wide, House Side Shield)	Lumens	457	1,620	2,032	2,673	3,346	4,169	4,614
		Lumens per Watt‡	35.2	80.6	80.0	80.3	77.6	72.9	69.8
		BUG Rating	B0-U0-G0	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G2
	SL2 (Type II w/Spill Control)1	Lumens	606	2,146	2,691	3,541	4,431	5,521	6,111
		Lumens per Watt‡	46.6	106.8	105.9	106.3	102.8	96.5	92.5
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL2-HSS (Type II w/Spill Control, House Side Shield)	Lumens	496	1,756	2,202	2,898	3,626	4,518	5,001
		Lumens per Watt‡	38.2	87.4	86.7	87.0	84.1	79.0	75.7
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	SL3 (Type III w/Spill Control)	Lumens	602	2,131	2,672	3,517	4,401	5,484	6,070
		Lumens per Watt‡	46.3	106.0	105.2	105.6	102.1	95.9	91.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL3-HSS (Type III w/Spill Control, House Side Shield)	Lumens	514	1,820	2,282	3,004	3,759	4,684	5,184
		Lumens per Watt‡	39.5	90.5	89.8	90.2	87.2	81.9	78.4
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2
	SL4 (Type IV w/Spill Control)	Lumens	582	2,060	2,583	3,399	4,254	5,300	5,867
		Lumens per Watt‡	44.8	102.5	101.7	102.1	98.7	92.7	88.8
		BUG Rating	B0-U0-G0	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2
	SL4-HSS (Type IV w/Spill Control, House Side Shield)	Lumens	503	1,782	2,235	2,941	3,681	4,587	5,077
		Lumens per Watt‡	38.7	88.7	88.0	88.3	85.4	80.2	76.8
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B0-U0-G1	B0-U0-G1	B1-U0-G2	B1-U0-G2
	SLR (90° Spill Light Eliminator Right)	Lumens	542	1,921	2,409	3,170	3,967	4,943	5,471
		Lumens per Watt‡	41.7	95.6	94.8	95.2	92.0	86.4	82.8
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLR-HSS (90° Spill Light Eliminator Right, House Side Shield)	Lumens	461	1,633	2,048	2,695	3,373	4,203	4,652
		Lumens per Watt‡	35.5	81.2	80.6	80.9	78.3	73.5	70.4
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL (90° Spill Light Eliminator Left)	Lumens	542	1,921	2,409	3,170	3,967	4,943	5,471
		Lumens per Watt‡	42	96	95	95	92	86	83
		BUG Rating	B0-U0-G0	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1
	SLL-HSS (90° Spill Light Eliminator Left, House Side Shield)	Lumens	461	1,633	2,048	2,695	3,373	4,203	4,652
		Lumens per Watt‡	35.5	81.2	80.6	80.9	78.3	73.5	70.4
		BUG Rating	B0-U0-G0	B0-U0-G1	B0-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1

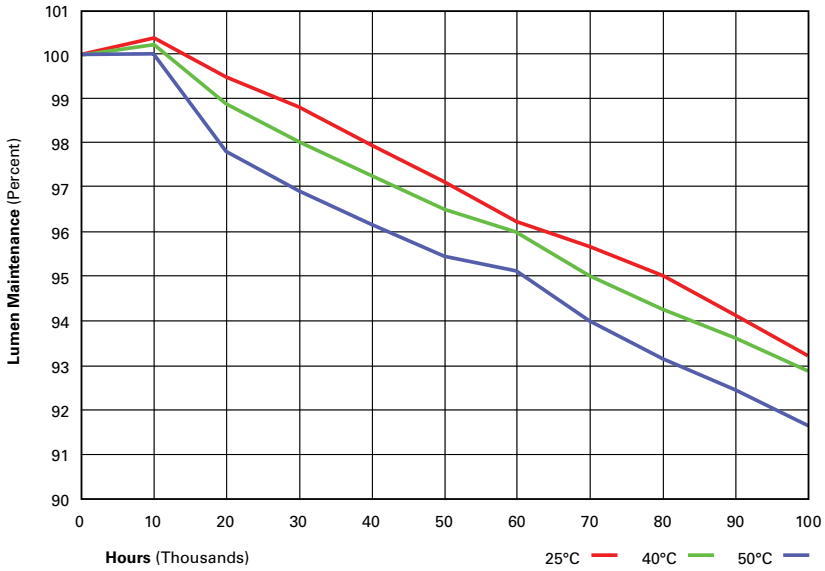
LUMEN MAINTENACE

SA1 (All Drive Currents)					
Hours	**25,000 hours***	**50,000 hours***	**60,000 hours***	**100,000 hours****	**Theoretical L70 (Hours)****
25˚C	99.4%	99.0%	98.9%	98.3%	2,471,000
40˚C	99.4%	99.0%	98.9%	98.3%	2,471,000
50˚C	99.4%	99.0%	98.9%	98.3%	2,471,000

* Supported by IES TM-21 standards
** Theoretical values represent estimations commonly used; however, refer to the IES position on LED Product Lifetime Prediction, IES PS-10-18, that explains proper use of IES TM-21 and LM-80.

LUMEN MULTIPLIER

Ambient Temperature	SA1 (All Drive Currents)
0˚C	1.02
10˚C	1.01
25˚C	1.00
40˚C	0.99
50˚C	0.97



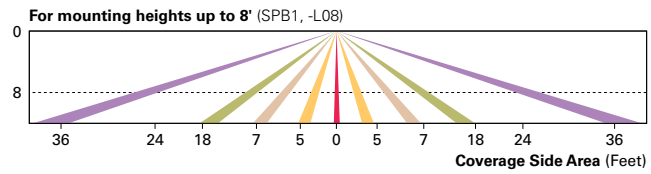
CONTROL OPTIONS

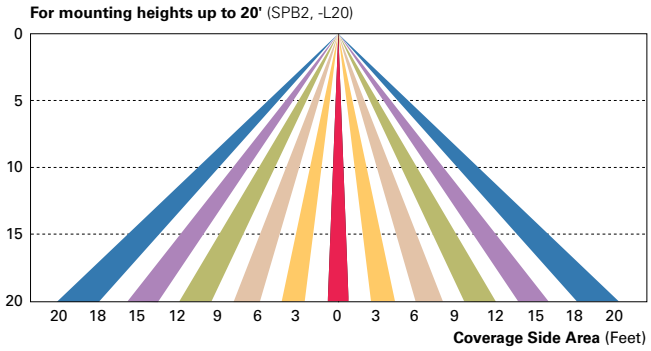
0-10V
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

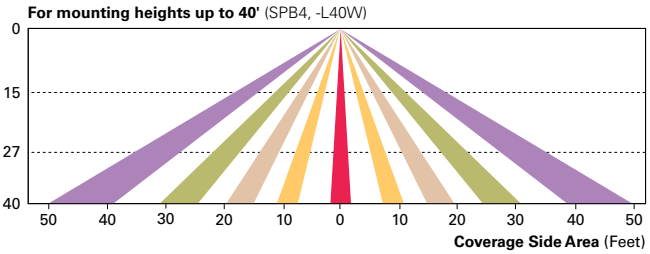
Photocontrol (BPC)
Optional button-type photocontrol (BPC) and photocontrol receptacles (PR and PR7) provide a flexible solution to enable “dusk-to-dawn” lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PR7 receptacle.

After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a “dusk-to-dawn” period has been calculated from the photocontrol input. Specify the desired dimming profile for a simple, factory-shipped dimming solution requiring no external control wiring. Reference the After Hours Dim supplemental guide for additional information.

Dimming Occupancy Sensor (MS/DIM-LXX and MS-LXX)
These sensors are factory installed in the luminaire housing. When the SPB or MS/DIM sensor options are selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when there is no activity detected. When activity is detected, the luminaire returns to full light output. The MS/DIM sensor is factory preset to dim down to approximately 50 percent power with a time delay of five minutes. The MS-LXX sensor is factory preset to turn the luminaire off after five minutes of no activity. SPB motion sensors require the Sensor Configuration mobile application by Wattstopper to change factory default dimming level, time delay, sensitivity and other parameters. Available for iOS and Android devices. The SPB sensor is factory preset to dim down to approximately 10% power with a time delay of five minutes. The MS/DIM occupancy sensors require the FSIR-100 programming tool to adjust factory defaults.







WaveLinx Wireless Control and Monitoring System
Available in 7-PIN or 4-PIN configurations, the WaveLinx Outdoor control platform operates on a wireless mesh network based on IEEE 802.15.4 standards enabling wireless control of outdoor lighting. Use the WaveLinx Mobile application for set-up and configuration. At least one Wireless Area Controller (WAC) is required for full functionality and remote communication (including adjustment of any factory pre-sets). WaveLinx Outdoor Control Module (WOLC-7P-10A) A photocontrol that enables astronomic or time-based schedules to provide ON, OFF and dimming control of fixtures utilizing a 7-PIN receptacle. The out-of-box functionality is ON at dusk and OFF at dawn. WaveLinx Wireless Sensor (SWPD4 and SWPD5) These outdoor sensors offer passive infrared (PIR) occupancy and a photocell for closed loop daylight sensing. These sensors can be factory installed or field-installed via simple, tool-less integration into luminaires equipped with the Zhaga Book 18 compliant 4-PIN receptacle (ZW). These sensors are factory preset to dim down to approximately 50 percent power after 15 minutes of no activity detected. These occupancy sensors include an integral photocell for "dusk-to-dawn" control or daylight harvesting that is factory-enabled. A variety of sensor lenses are available to optimize the coverage pattern for mounting heights from 7'-20', only applies for typical wall packs.

Project		Catalog #		Type	
Prepared by		Notes		Date	



McGraw-Edison

GALN Galleon II

Area / Site Luminaire

Product Features

Light ARchitect™

BAA BUY AMERICAN ACT

Product Certifications

ISO SYSTEMS CERTIFIED · DLC LISTED [1] · DLC LISTED PREMIUM [1] · 3G VIB · IP66 · UL CERTIFIED · ida DARK SKY APPROVED [2] · 5 YEAR LIMITED WARRANTY

Interactive Menu

- Ordering Information page 2
- Mounting Details page 3
- Optical Distributions page 5
- Product Specifications page 5
- Energy and Performance Data page 6
- Control Options page 11

Quick Facts

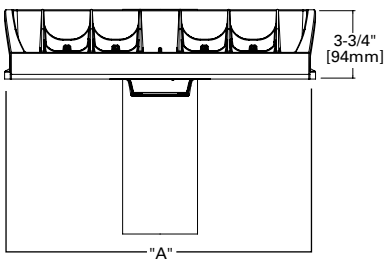
- Lumen packages range from 3,300 - 73,500 (33W - 552W)
- 17 optical distributions
- Efficacy up to 159 lumens per watt

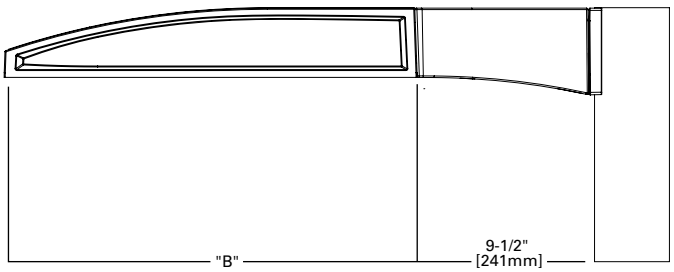
Connected Systems

- WaveLinx Lite
- WaveLinx

Dimensional Details

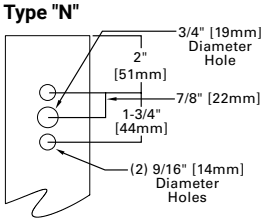
Standard Pole Mount Arm





Pole Drilling Pattern

Type "N"



Number of Light Squares	Width "A"	Housing Length "B"	Weight with Standard or QM Arm	EPA with Standard or QM Arm
1-4	16"	22"	29 lb	0.95
5-6	22"	22"	39 lb	0.95
7-9	22"	28-1/8"	48 lb	1.1

NOTES:
For arm selection requirements and additional line art, see Mounting Details section.

NOTES:
1. Visit https://www.designlights.org/search/ to confirm qualification. Not all product variations are DLC qualified.
2. IDA Certified (3000K CCT and warmer only, fixed mounting options)

Ordering Information

SAMPLE NUMBER: **GALN-SA4C-740-U-T4FT-GM**

Product Family [1, 2]	Light Engine		Color Temperature	Voltage	Distribution	Mounting	Finish
	Configuration	Drive Current					
GALN=Galleon II **BAA-GALN**=Galleon II Buy American Act Compliant [27] **TAA-GALN**=Galleon II Trade Agreements Act Compliant [27]	**SA1**=1 Square **SA2**=2 Squares **SA3**=3 Squares **SA4**=4 Squares **SA5**=5 Squares **SA6**=6 Squares **SA7**=7 Squares **SA8**=8 Squares **SA9**=9 Squares	**A**=600mA **B**=800mA **C**=1000mA **D**=1200mA [4, 17] **Z**=Configured [33]	**722**=70CRI, 2200K **727**=70CRI, 2700K **730**=70CRI, 3000K **735**=70CRI, 3500K **740**=70CRI, 4000K **750**=70CRI, 5000K **760**=70CRI, 6000K **827**=80CRI, 2700K **830**=80CRI, 3000K **835**=80CRI, 3500K **840**=80CRI, 4000K **930**=90CRI, 3000K **935**=90CRI, 3500K **940**=90CRI, 4000K **950**=90CRI, 5000K **AMB**=Amber, 590nm [15, 17]	**U**=120-277V **H**=347V-480V [7, 30] **1**=120V **2**=208V **3**=240V **4**=277V **8**=480V [7, 30] **9**=347V [7] **DV**=277V-480V DuraVolt Drivers [29, 30, 31]	**T1**=Type I **T2**=Type II **T2R**=Type II Roadway **T3**=Type III **T3R**=Type III Roadway **T4FT**=Type IV Forward Throw **T4W**=Type IV Wide **5NQ**=Type V Narrow **5MQ**=Type V Square Medium **5WQ**=Type V Square Wide **SL2**=Type II w/Spill Control **SL3**=Type III w/Spill Control **SL4**=Type IV w/Spill Control **SLL**=90° Spill Light Eliminator Left **SLR**=90° Spill Light Eliminator Right **RW**=Rectangular Wide Type I **AFL**=Automotive Frontline	**[Blank]**=Standard Pole Mount Arm **QU**=Quick Mount Universal Arm **QM**=Pole Mount Arm with Quick Mount Adaptor **PA**=Pole Mount, Adjustable **SP**=3" Slipfitter, Adjustable [8] **SP2**=2-3/8" Slipfitter, Adjustable [8] **QMA**=Quick Mount Mast Arm, Fixed **MA**=Mast Arm, Fixed **WM**=Wall Mount, Fixed **WA**=Wall Mount, Adjustable **UP**=Upswept Arm	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White **RALXX**=Custom Color

Options (Add as Suffix)	Controls and Systems Options (Add as Suffix)	Accessories (Order Separately) [28]
DIM=External 0-10V Dimming Leads [20] **F**=Single Fuse (120, 277 or 347V Specify Voltage) **FF**=Double Fuse (208, 240 or 480V Specify Voltage) **20K**=20kV UL 1449 fused surge protective device [10] **2L**=Two Circuits [10] **HA**=50°C High Ambient **HSS**=Installed House Side Shield [18] **GRSBK**=Glare Reducing Shield, Black [23] **GRSWH**=Glare Reducing Shield, White [23] **LCF**=Light Square Trim Painted to Match Housing [26] **TH**=Tool-less Door Hardware [5] **CC**=Coastal Construction finish [3] **L90**=Optics Rotated 90° Left **R90**=Optics Rotated 90° Right **AHD145**=After Hours Dim, 5 Hours [22] **AHD245**=After Hours Dim, 6 Hours [22] **AHD255**=After Hours Dim, 7 Hours [22] **AHD355**=After Hours Dim, 8 Hours [22] **DALI**=DALI Drivers	**BPC**=Button Type Photocontrol. Must specify voltage 120V, 208V, 240V or 277V. [6] **PR**=NEMA 3-PIN Photocontrol Receptacle **PR7**=NEMA 7-PIN Photocontrol Receptacle [21] **FADC**=Field Adjustable Dimming Controller [32] **PSC**=Photocontrol Shorting Cap **SPB2**=Dimming Motion Sensor, 9'-20' mounting [24] **SPB4**=Dimming Motion Sensor, 21'-40' mounting [24] **SPB2/X**=Dimming Motion Sensor, limited square count, 9'-20' mounting [24] **SPB4/X**=Dimming Motion Sensor, limited square count, 21'-40' mounting [24] **MS/DIM-L20**=Motion Sensor for Dimming Operation, 9'-20' Mounting [34] **MS/DIM-L40**=Motion Sensor for Dimming Operation, 21'-40' Mounting [34] **ZW**=WaveLinx-enabled 4-PIN Twistlock Receptacle [19] **ZD**=SR Driver-enabled 4-PIN Twistlock Receptacle [19] **ZW-WOBXX**=WaveLinx Lite, Dimming Motion and Daylight, Bluetooth Programmable, 7' - 15' Mounting [19, 12] **ZW-WOFXX**=WaveLinx Lite, Dimming Motion and Daylight, Bluetooth Programmable, 15' - 40' Mounting [19, 12] **ZD-WOBXX**=WaveLinx Lite, SR Driver, Dimming Motion and Daylight, Bluetooth Programmable, 7' - 15' Mounting [19, 12] **ZD-WOFXX**=WaveLinx Lite, SR Driver, Dimming Motion and Daylight, Bluetooth Programmable, 15' - 40' Mounting [19, 12] **ZW-SWPD4XX**=WaveLinx Pro, Dimming Motion and Daylight, WAC Programmable, 7' - 15' Mounting [19, 12, 13] **ZW-SWPD5XX**=WaveLinx Pro, Dimming Motion and Daylight, WAC Programmable, 15' - 40' Mounting [19, 12, 13] **ZD-SWPD4XX**=WaveLinx Pro, SR Driver, Dimming Motion and Daylight, WAC Programmable, 7' - 15' Mounting [19, 12, 13] **ZD-SWPD5XX**=WaveLinx Pro, SR Driver, Dimming Motion and Daylight, WAC Programmable, 15' - 40' Mounting [19, 12, 13] **DIM10-L20**=Synapse Occupancy Sensor (9'-20' Mounting) [19] **DIM10-L40**=Synapse Occupancy Sensor (21'-40' Mounting) [19]	**OA/RA1016**=NEMA Photocontrol Multi-Tap - 105-285V **OA/RA1027**=NEMA Photocontrol - 480V **OA/RA1201**=NEMA Photocontrol - 347V **OA/RA1013**=Photocontrol Shorting Cap **OA/RA1014**=120V Photocontrol **MA1252**=10kV Surge Module Replacement **MA1036-XX**=Single Tenon Adapter for 2-3/8" O.D. Tenon **MA1037-XX**=2@180° Tenon Adapter for 2-3/8" O.D. Tenon **MA1197-XX**=3@120° Tenon Adapter for 2-3/8" O.D. Tenon **MA1188-XX**=4@90° Tenon Adapter for 2-3/8" O.D. Tenon **MA1189-XX**=2@90° Tenon Adapter for 2-3/8" O.D. Tenon **MA1190-XX**=3@90° Tenon Adapter for 2-3/8" O.D. Tenon **MA1191-XX**=2@120° Tenon Adapter for 2-3/8" O.D. Tenon **MA1038-XX**=Single Tenon Adapter for 3-1/2" O.D. Tenon **MA1039-XX**=2@180° Tenon Adapter for 3-1/2" O.D. Tenon **MA1192-XX**=3@120° Tenon Adapter for 3-1/2" O.D. Tenon **MA1193-XX**=4@90° Tenon Adapter for 3-1/2" O.D. Tenon **MA1194-XX**=2@90° Tenon Adapter for 3-1/2" O.D. Tenon **MA1195-XX**=3@90° Tenon Adapter for 3-1/2" O.D. Tenon **SRA238**=Adapter kit for mounting 3" SP arm to 2-3/8" O.D. vertical tenon **FSIR-100**=Wireless Configuration Tool for MS/DIM [34] **LS/HSS**=Field Installed House Side Shield [9, 18] **LS/GRSBK-2PK** =Glare Reducing Shield, Black [9, 23] **LS/GRSWH-2PK** =Glare Reducing Shield, White [9, 23] **LS/PFS**=Perimeter Shield, Black [16] **WOLC-7P-10A**=WaveLinx Outdoor Control Module [11, 19] **WOB-XX**=WaveLinx Lite Sensor, Dimming Motion and Daylight, Bluetooth Programmable, 7' - 15' Mounting [12, 14, 19] **WOF-XX**=WaveLinx Lite Sensor, Dimming Motion and Daylight, Bluetooth Programmable, 15' - 40' Mounting [12, 14, 19] **SWPD4-XX**=WaveLinx Sensor, Dimming Motion and Daylight, WAC Programmable, 7' - 15' Mounting [12, 13, 14, 19] **SWPD5-XX**=WaveLinx Sensor, Dimming Motion and Daylight, WAC Programmable, 15' - 40' Mounting [12, 13, 14, 19]

NOTES:

1. Customer is responsible for engineering analysis to confirm pole and fixture compatibility for all applications. Refer to our white paper WP513001EN for additional support information.
2. DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.
3. Coastal construction finish salt spray tested to over 5,000-hours per ASTM B117, with a scribe rating of 9 per ASTM D1654. Not available with TH option.
4. Drive current 1200mA not available with color temperatures 722, 727, 827, 830 or 930 when the HSS option is selected.
5. TH option not 3G rated. Not available with Coastal Construction (CC) option.
6. Not available with voltage options H, 8 or 9.
7. Requires the use of an internal step down transformer when combined with sensor options. Not available in combination with the HA high ambient and sensor options at 1A.
8. SP arm limited to 3" O.D. vertical tenon. SP2 limited to 2-3/8" O.D. vertical tenon.
9. One required for each Light Square.
10. 2L is not available with SPB at 347V or 480V. Not available with WaveLinx or Enlighted sensors, or 20kV surge option.
11. Requires PR7.
12. Replace XX with sensor color (WH, BZ or BK.)
13. WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed. WAC not required for LC Bluetooth sensors.
14. Requires ZW or ZD receptacle.
15. Narrow-band 590nm +/- 5nm for wildlife and observatory use. Choose drive current A; supplied at 500mA drive current only. Exact luminaire wattage available in IES files. Available with 5WQ, 5MQ, SL2, SL3 and SL4 distributions. Can be used with HSS option.
16. Set of 4 pcs. One set required per Light Square.
17. Not available with HA option.
18. Not for use with T1, 5NQ, 5MQ, 5WQ or RW optics.
19. Cannot be used with other control options.
20. Low voltage control lead brought out 18" outside fixture. Not available with DALI or integrated controls options
21. Not available if any SPB, LWR, or WaveLinx sensor is selected. Motion sensor has an integral photocell.
22. Requires the use of BPC photocontrol or the PR7 or PR photocontrol receptacle with photocontrol accessory.
23. Not for use with T1, T4FT, T4W or SL4 optics.
24. Sensor configuration mobile application required for configuration. See controls page for details.
25. Replace X with number of Light Squares controlled by the SPB, referencing the "SPB/X Availability Table" on the controls page.
26. Not available with HSS, GRSWH or GRSBK.
27. Only product configurations with these designated prefixes are built to be compliant with the Buy American Act of 1933 (BAA) or Trade Agreements Act of 1979 (TAA), respectively. Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.
28. For BAA or TAA requirements, Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.
29. DuraVolt drivers feature added protection from power quality issues such as loss of neutral, transients and voltage fluctuations. Visit www.signify.com/duravolt for more information.
30. 480V not to be used with ungrounded or impedance grounded systems.
31. Not available in 1 square configuration at 800mA or below. Not available with any control option except SPB.
32. Cannot be used with PR7 or other motion response control options.
33. Use GALN Product Configurator to specify lumen output, drive current and wattage. Not available with AMB.
34. Uses the FSP-211 motion sensor. The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative at Cooper Lighting Solutions for more information.

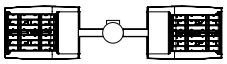
LumenSafe Integrated Network Security Camera Technology Options (Add as Suffix)

Product Family	Camera Type	Data Backhaul	
L=LumenSafe Technology	**D**=Standard Dome Camera **H**=Hi-Res Dome Camera **Z**=Remote PTZ Camera	**C**=Cellular, No SIM **A**=Cellular, AT&T **V**=Cellular, Verizon **S**=Cellular, Sprint	**R**=Cellular, Rogers **W**=Wi-Fi Networking w/ Omni-Directional Antenna **E**=Ethernet Networking

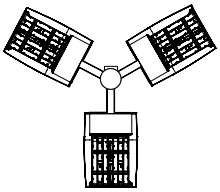
Mounting Details

Pole Configuration Options

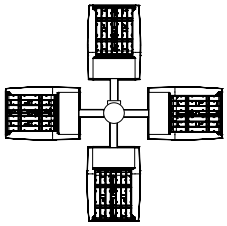
2 @ 180°



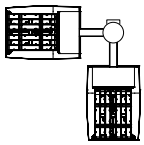
3 @ 120° (Round poles only)



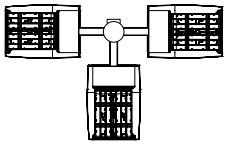
4 @ 90°



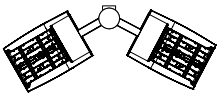
2 @ 90°



3 @ 90°



2 @ 120° (Round poles only)



Pole Drilling Patterns

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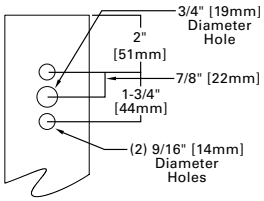
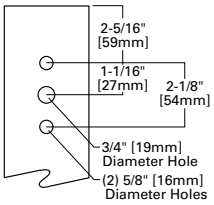
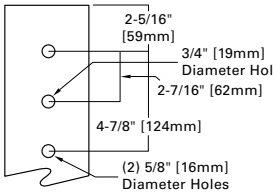


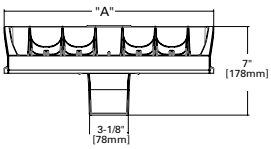
Type "R"

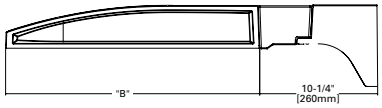


Type "M"



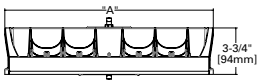
Quick Mount Universal Arm (QU)



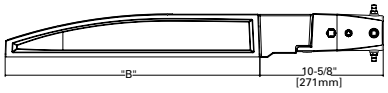


*NOTE: Universal bolt pattern compatible with Type N through Type M drilling patterns

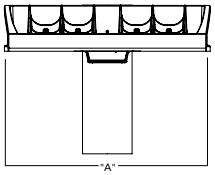
Quick Mount Mast Arm (QMA)

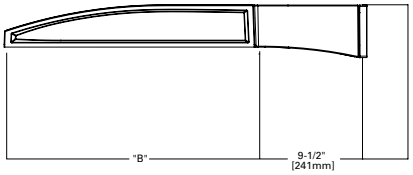


*NOTE: Fits 2-3/8" O.D. tenon



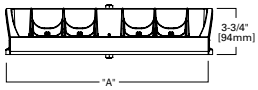
Pole Mount Arm with Quick Mount Adaptor (QM)



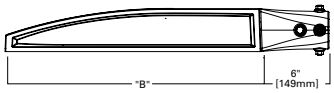


*NOTE: Use Type N drilling pattern

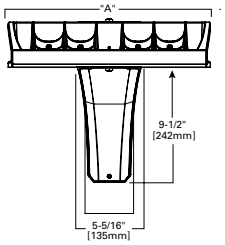
Mast Arm, Fixed (MA)

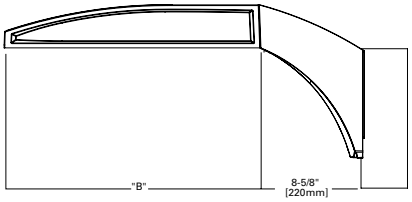


*NOTE: Fits 2-3/8" O.D. tenon



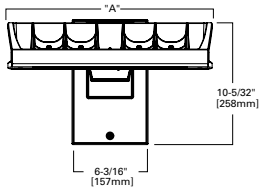
Upswept Arm (UP)

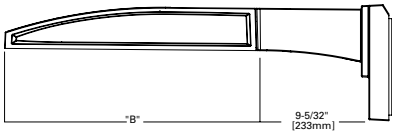




*NOTE: Universal bolt pattern compatible with Type N through Type M drilling patterns

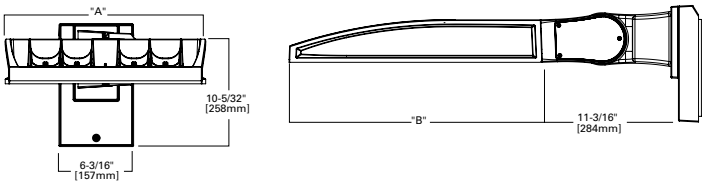
Wall Mount, Fixed (WM)



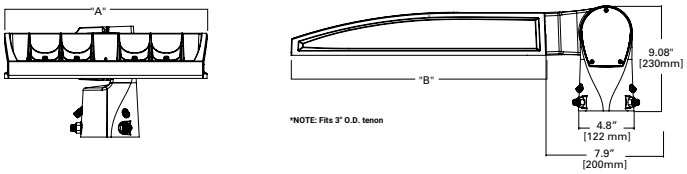


Mounting Details

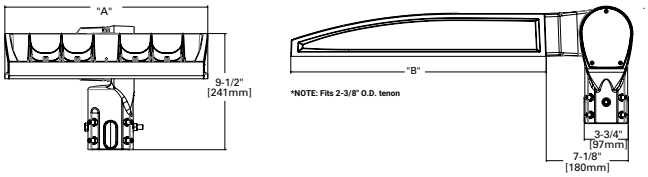
Wall Mount, Adjustable (WA)



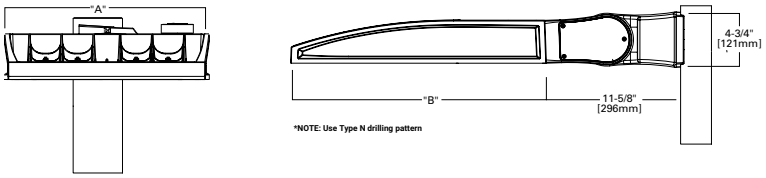
3" Slipfitter, Adjustable (SP)



2-3/8" Slipfitter, Adjustable (SP2)

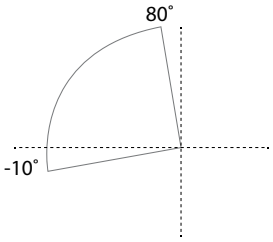


Pole Mount, Adjustable Arm (PA)



Adjustable Arm Range of Motion

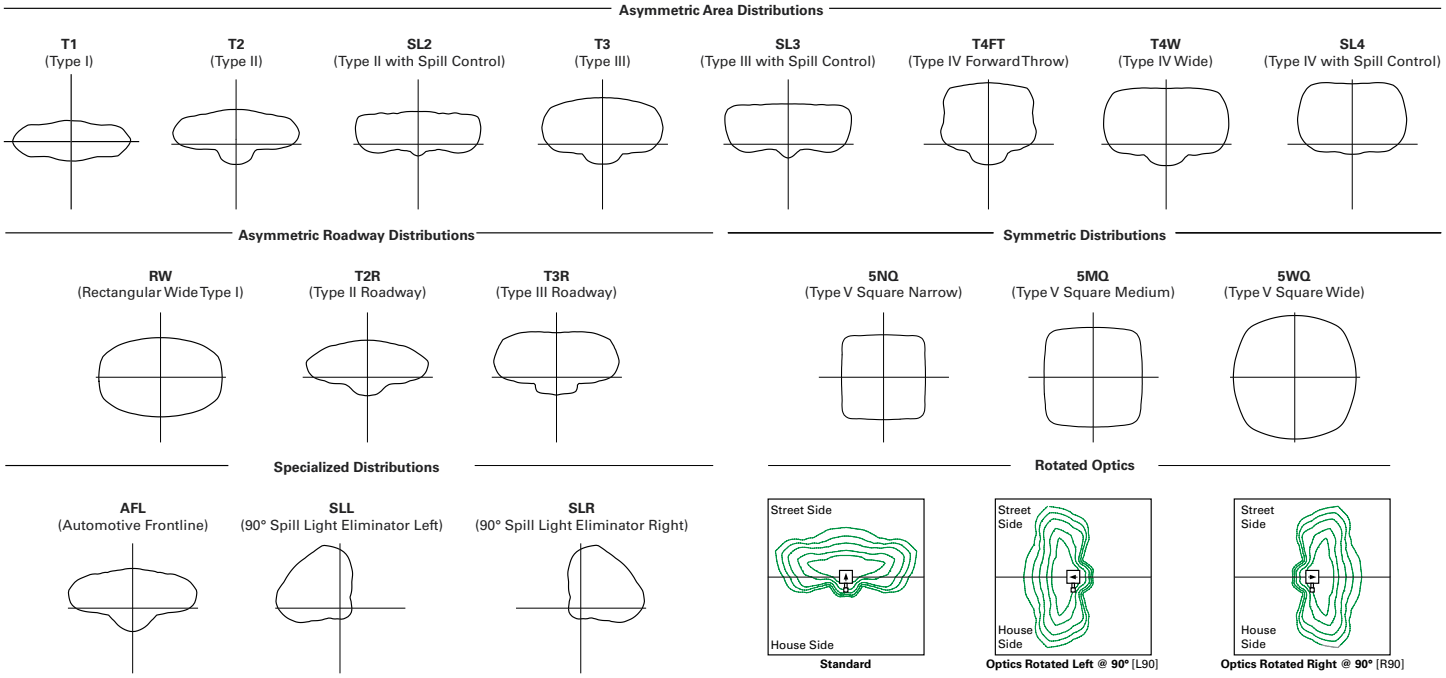
- Includes WA, SP, SP2 and PA mounting options
- Adjustable in increments of 5°
- Must maintain downward facing orientation



Fixture Weights and EPAs

Tilt Angle (Degrees)	Number of Light Squares	Weight	1 @ 90°	2 @ 180°	2 @ 90°	2 @ 120°	3 @ 90°	3 @ 120°	4 @ 90°
0°	1-4	33.5 lb (15.2 kg)	0.85	1.70	1.46	1.66	2.31	2.25	2.35
	5-6	43.5 lb (19.7 kg)	0.86	1.71	1.62	1.80	2.49	2.35	2.50
	7-9	52.5 lb (23.8 kg)	0.98	1.95	1.75	1.98	2.73	2.55	2.76
15°	1-4	33.5 lb (15.2 kg)	1.10	1.71	1.95	2.26	2.81	3.30	2.87
	5-6	43.5 lb (19.7 kg)	1.42	1.71	2.27	2.72	3.13	3.63	3.15
	7-9	52.5 lb (23.8 kg)	1.69	1.96	2.67	3.22	3.65	4.38	3.72
30°	1-4	33.5 lb (15.2 kg)	1.72	1.81	2.58	3.21	3.44	4.59	3.53
	5-6	43.5 lb (19.7 kg)	2.26	2.29	3.11	4.00	3.97	5.27	4.00
	7-9	52.5 lb (23.8 kg)	2.75	2.85	3.73	4.83	4.71	6.45	4.81
45°	1-4	33.5 lb (15.2 kg)	2.25	2.36	3.10	4.00	3.96	5.63	4.08
	5-6	43.5 lb (19.7 kg)	2.96	2.99	3.81	5.06	4.67	6.49	4.71
	7-9	52.5 lb (23.8 kg)	3.63	3.76	3.73	6.17	5.59	8.03	5.73
60°	1-4	33.5 lb (15.2 kg)	2.63	2.77	3.49	4.58	4.34	6.21	4.48
	5-6	43.5 lb (19.7 kg)	3.46	3.51	4.32	5.84	5.19	7.01	5.22
	7-9	52.5 lb (23.8 kg)	4.27	4.44	5.25	7.15	6.23	8.80	6.40

Optical Distributions



Product Specifications

Construction
- Die-cast aluminum housing and heat sink
- Three housing sizes, using 1 to 9 light squares

Optics
- High-efficiency injection-molded AccuLED Optics technology
- 17 optical distributions for area site and roadway applications
- 3 shielding options include HSS, GRS and PFS
- IDA Certified (3000K CCT and warmer only, fixed mounting options)

Electrical
- Removable power tray assembly includes drivers, surge modules and control modules for ease of maintenance and serviceability
- Standard with 0-10V dimming
- Standard with 10kV surge module, optional 20kV surge module
- Suitable for operation in -40°C to 40°C ambient environments. Optional 50°C high ambient (HA) configuration

Mounting
- Arms are factory installed, enabling closed-housing installation
- All arms suitable for round or square pole installation
- All arms provide clearance for multiple fixture installations at 90°

Finish
- 6 standard finishes use super durable TGIC polyester powder coat paint, providing 2.5 mil nominal thickness and salt-spray tested to 3,000 hours per ASTM B117
- RAL and custom color matches available
- Coastal Construction (CC) option salt-spray tested to 5,000 hours per ASTM B117, achieving a scribe rating of 9 per ASTM D1654

Typical Applications
- Outdoor, Parking Lots, Walkways, Roadways, Building Areas

Warranty
- Five year limited warranty

Energy and Performance Data

Lumen Maintenance (TM-21)

Drive Current	Ambient Temperature	25,000 hours*	50,000 hours*	60,000 hours*	100,000 hours**	Theoretical L70 hours**
Up to 1A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.7%	98.3%	98.1%	97.4%	> 1.9M
	50°C	98.2%	97.2%	96.8%	95.2%	> 851,000
1.2A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.5%	97.9%	97.7%	96.7%	> 1.3M

* Supported by IES TM-21 standards
** Theoretical values represent estimations commonly used; however, refer to the IES position on LED Product Lifetime Prediction, IES PS-10-18, explaining proper use of IES TM-21 and LM-80.

Lumen Multiplier

Ambient Temperature	Lumen Multiplier
0ºC	1.02
10ºC	1.01
25ºC	1.00
40ºC	0.99
50ºC	0.97

FADC Settings
SA1-SA3 (A, B, C, D Drive Current)

FADC Position	Percent of Typical Lumen Output
1	25%
2	48%
3	56%
4	65%
5	75%
6	80%
7	85%
8	90%
9	95%
10	100%

FADC Settings
SA4-SA6 (A, B, C, D Drive Current)

FADC Position	Percent of Typical Lumen Output
1	14%
2	25%
3	32%
4	43%
5	49%
6	57%
7	65%
8	72%
9	80%
10	100%

FADC Settings
SA7-SA9 (A, B, C, D Drive Current)

FADC Position	Percent of Typical Lumen Output
1	19%
2	38%
3	47%
4	63%
5	74%
6	85%
7	95%
8	97%
9	100%
10	100%

Performance Table, Drive Current "A" (615mA)

Number of Light Squares		1	2	3	4	5	6	7	8	9
Nominal Power (Watts)		33	63	93	121	154	182	215	244	274
Input Current @ 120V		0.283	0.529	0.778	1.058	1.310	1.556	1.839	2.089	2.335
Input Current @ 208V		0.165	0.309	0.460	0.618	0.771	0.919	1.082	1.240	1.379
Input Current @ 240V		0.143	0.270	0.398	0.540	0.671	0.796	0.944	1.078	1.194
Input Current @ 277V		0.125	0.237	0.352	0.473	0.581	0.705	0.818	0.962	1.057
Input Current @ 347V		0.098	0.181	0.272	0.362	0.454	0.544	0.636	0.738	0.816
Input Current @ 480V		0.073	0.133	0.200	0.267	0.335	0.400	0.470	0.554	0.600
Optics										
T1	4000K Lumens	4,619	9,180	13,628	18,059	22,861	27,070	31,796	36,863	41,385
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3
	Lumens per Watt	140	146	147	149	148	149	148	151	151
T2	4000K Lumens	4,654	9,249	13,730	18,194	23,032	27,273	32,034	37,138	41,694
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
	Lumens per Watt	141	147	148	150	150	150	149	152	152
T2R	4000K Lumens	4,716	9,372	13,913	18,437	23,340	27,637	32,462	37,634	42,251
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4
	Lumens per Watt	143	149	150	152	152	152	151	154	154
T3	4000K Lumens	4,589	9,120	13,538	17,940	22,711	26,892	31,587	36,620	41,112
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G4
	Lumens per Watt	139	145	146	148	147	148	147	150	150
T3R	4000K Lumens	4,735	9,411	13,970	18,513	23,436	27,751	32,596	37,790	42,425
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
	Lumens per Watt	143	149	150	153	152	152	152	155	155
T4FT	4000K Lumens	4,617	9,176	13,622	18,051	22,851	27,058	31,782	36,847	41,366
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	140	146	146	149	148	149	148	151	151
T4W	4000K Lumens	4,631	9,203	13,662	18,104	22,918	27,138	31,876	36,955	41,488
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	140	146	147	150	149	149	148	151	151
SL2	4000K Lumens	4,619	9,180	13,627	18,058	22,860	27,069	31,795	36,861	41,383
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5
	Lumens per Watt	140	146	147	149	148	149	148	151	151
SL3	4000K Lumens	4,586	9,115	13,531	17,931	22,699	26,879	31,571	36,602	41,091
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
	Lumens per Watt	139	145	145	148	147	148	147	150	150
SL4	4000K Lumens	4,529	9,002	13,363	17,708	22,417	26,544	31,178	36,146	40,580
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G4	B2-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	137	143	144	146	146	146	145	148	148
5NQ	4000K Lumens	4,829	9,598	14,247	18,880	23,901	28,301	33,242	38,539	43,266
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3
	Lumens per Watt	146	152	153	156	155	155	155	158	158
5MQ	4000K Lumens	4,853	9,645	14,318	18,974	24,020	28,442	33,407	38,731	43,482
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	147	153	154	157	156	156	155	159	159
5WQ	4000K Lumens	4,843	9,625	14,288	18,934	23,969	28,382	33,337	38,649	43,390
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5
	Lumens per Watt	147	153	154	156	156	156	155	158	158
SLL/ SLR	4000K Lumens	3,989	7,927	11,768	15,594	19,741	23,375	27,456	31,831	35,736
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
	Lumens per Watt	121	126	127	129	128	128	128	130	130
RW	4000K Lumens	4,774	9,488	14,085	18,665	23,628	27,979	32,863	38,100	42,774
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3
	Lumens per Watt	145	151	151	154	153	154	153	156	156
AFL	4000K Lumens	4,673	9,286	13,785	18,268	23,126	27,384	32,164	37,290	41,864
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3
	Lumens per Watt	142	147	148	151	150	150	150	153	153

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Performance Table, Drive Current "B" (800mA)

Number of Light Squares		1	2	3	4	5	6	7	8	9
Nominal Power (Watts)		44	82	121	164	204	243	286	325	364
Input Current @ 120V		0.367	0.689	1.014	1.378	1.704	2.027	2.393	2.716	3.041
Input Current @ 208V		0.213	0.401	0.594	0.802	0.997	1.188	1.400	1.605	1.782
Input Current @ 240V		0.184	0.347	0.510	0.694	0.860	1.021	1.210	1.386	1.531
Input Current @ 277V		0.160	0.303	0.449	0.605	0.757	0.898	1.065	1.242	1.347
Input Current @ 347V		0.125	0.235	0.355	0.471	0.592	0.710	0.828	0.958	1.065
Input Current @ 480V		0.092	0.172	0.258	0.344	0.432	0.517	0.605	0.706	0.775
Optics										
T1	4000K Lumens	5,748	11,423	16,957	22,470	28,446	33,683	39,563	45,867	51,494
	BUG Rating	B2-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	131	139	140	137	139	139	138	141	141
T2	4000K Lumens	5,790	11,508	17,083	22,638	28,658	33,935	39,859	46,210	51,879
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	132	140	141	138	140	140	139	142	143
T2R	4000K Lumens	5,868	11,662	17,311	22,941	29,041	34,388	40,391	46,827	52,572
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
	Lumens per Watt	133	142	143	140	142	142	141	144	144
T3	4000K Lumens	5,710	11,347	16,845	22,322	28,258	33,461	39,303	45,565	51,155
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B4-U0-G4	B4-U0-G5	B4-U0-G5
	Lumens per Watt	130	138	139	136	139	138	137	140	141
T3R	4000K Lumens	5,892	11,710	17,383	23,035	29,161	34,530	40,558	47,020	52,788
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	134	143	144	140	143	142	142	145	145
T4FT	4000K Lumens	5,745	11,418	16,949	22,460	28,433	33,668	39,546	45,847	51,471
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	131	139	140	137	139	139	138	141	141
T4W	4000K Lumens	5,762	11,451	16,999	22,526	28,517	33,767	39,662	45,982	51,622
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	131	140	140	137	140	139	139	141	142
SL2	4000K Lumens	5,747	11,422	16,956	22,469	28,444	33,681	39,561	45,865	51,491
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	131	139	140	137	139	139	138	141	141
SL3	4000K Lumens	5,707	11,342	16,836	22,311	28,244	33,444	39,283	45,542	51,129
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	130	138	139	136	138	138	137	140	140
SL4	4000K Lumens	5,636	11,201	16,627	22,034	27,893	33,028	38,794	44,976	50,493
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	128	137	137	134	137	136	136	138	139
5NQ	4000K Lumens	6,009	11,942	17,727	23,492	29,739	35,214	41,362	47,953	53,835
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3
	Lumens per Watt	137	146	147	143	146	145	145	148	148
5MQ	4000K Lumens	6,039	12,001	17,816	23,609	29,887	35,389	41,568	48,191	54,103
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5
	Lumens per Watt	137	146	147	144	147	146	145	148	149
5WQ	4000K Lumens	6,026	11,976	17,778	23,559	29,824	35,315	41,480	48,090	53,989
	BUG Rating	B3-U0-G1	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5
	Lumens per Watt	137	146	147	144	146	145	145	148	148
SLL/ SLR	4000K Lumens	4,963	9,863	14,642	19,403	24,563	29,085	34,163	39,607	44,465
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	113	120	121	118	120	120	119	122	122
RW	4000K Lumens	5,940	11,806	17,526	23,224	29,400	34,813	40,891	47,407	53,222
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	135	144	145	142	144	143	143	146	146
AFL	4000K Lumens	5,814	11,555	17,153	22,730	28,775	34,073	40,021	46,398	52,090
	BUG Rating	B1-U0-G1	B2-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G4
	Lumens per Watt	132	141	142	139	141	140	140	143	143

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Performance Table, Drive Current "C" (1050mA)

Number of Light Squares		1	2	3	4	5	6	7	8	9
Nominal Power (Watts)		57	108	160	213	269	321	377	429	481
Input Current @ 120V		0.478	0.905	1.338	1.810	2.244	2.675	3.150	3.584	4.013
Input Current @ 208V		0.279	0.532	0.780	1.064	1.313	1.559	1.845	2.093	2.339
Input Current @ 240V		0.243	0.458	0.664	0.916	1.123	1.328	1.582	1.788	1.991
Input Current @ 277V		0.213	0.404	0.582	0.808	0.997	1.164	1.401	1.589	1.745
Input Current @ 347V		0.164	0.322	0.471	0.644	0.795	0.943	1.117	1.269	1.414
Input Current @ 480V		0.121	0.235	0.341	0.469	0.579	0.681	0.814	0.923	1.022
Optics										
T1	4000K Lumens	7,101	14,113	20,950	27,763	35,146	41,616	48,882	56,671	63,623
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	125	131	131	130	131	130	130	132	132
T2	4000K Lumens	7,154	14,219	21,107	27,970	35,408	41,927	49,247	57,094	64,098
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	132	132	131	132	131	131	133	133
T2R	4000K Lumens	7,250	14,408	21,389	28,344	35,881	42,487	49,905	57,857	64,954
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	127	133	134	133	133	132	132	135	135
T3	4000K Lumens	7,054	14,020	20,812	27,580	34,914	41,342	48,560	56,297	63,203
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B4-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	124	130	130	129	130	129	129	131	131
T3R	4000K Lumens	7,280	14,468	21,477	28,461	36,029	42,663	50,111	58,096	65,222
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	128	134	134	134	134	133	133	135	136
T4FT	4000K Lumens	7,098	14,107	20,941	27,751	35,130	41,598	48,860	56,646	63,594
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	125	131	131	130	131	130	130	132	132
T4W	4000K Lumens	7,119	14,148	21,003	27,832	35,233	41,720	49,004	56,812	63,781
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	125	131	131	131	131	130	130	132	133
SL2	4000K Lumens	7,101	14,112	20,949	27,761	35,144	41,614	48,879	56,668	63,619
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	125	131	131	130	131	130	130	132	132
SL3	4000K Lumens	7,051	14,013	20,802	27,566	34,897	41,321	48,535	56,269	63,172
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	124	130	130	129	130	129	129	131	131
SL4	4000K Lumens	6,963	13,839	20,543	27,223	34,463	40,808	47,932	55,569	62,386
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	122	128	128	128	128	127	127	130	130
5NQ	4000K Lumens	7,424	14,755	21,903	29,025	36,743	43,508	51,104	59,247	66,515
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	130	137	137	136	137	136	136	138	138
5MQ	4000K Lumens	7,461	14,828	22,012	29,169	36,926	43,725	51,359	59,542	66,846
	BUG Rating	B3-U0-G1	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5
	Lumens per Watt	131	137	138	137	137	136	136	139	139
5WQ	4000K Lumens	7,445	14,797	21,966	29,108	36,849	43,633	51,250	59,417	66,705
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	131	137	137	137	137	136	136	139	139
SLL/ SLR	4000K Lumens	6,132	12,187	18,091	23,973	30,348	35,936	42,210	48,935	54,938
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	108	113	113	113	113	112	112	114	114
RW	4000K Lumens	7,340	14,587	21,653	28,694	36,325	43,013	50,522	58,573	65,757
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	129	135	135	135	135	134	134	137	137
AFL	4000K Lumens	7,183	14,276	21,193	28,084	35,552	42,098	49,448	57,327	64,359
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B4-U0-G4
	Lumens per Watt	126	132	132	132	132	131	131	134	134

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Performance Table, Drive Current "D" (1200mA)

Number of Light Squares		1	2	3	4	5	6	7	8	9
Nominal Power (Watts)		65	125	184	245	309	368	433	493	552
Input Current @ 120V		0.546	1.041	1.535	2.082	2.578	3.070	3.619	4.114	4.605
Input Current @ 208V		0.318	0.610	0.893	1.219	1.504	1.786	2.113	2.397	2.679
Input Current @ 240V		0.276	0.523	0.758	1.046	1.282	1.516	1.806	2.041	2.274
Input Current @ 277V		0.241	0.460	0.662	0.920	1.133	1.325	1.593	1.807	1.987
Input Current @ 347V		0.187	0.370	0.543	0.740	0.915	1.085	1.285	1.459	1.628
Input Current @ 480V		0.138	0.269	0.391	0.537	0.663	0.782	0.932	1.057	1.173
Optics										
T1	4000K Lumens	7,814	15,529	23,053	30,549	38,672	45,793	53,787	62,358	70,007
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	120	124	125	125	125	124	124	126	127
T2	4000K Lumens	7,872	15,645	23,225	30,777	38,962	46,135	54,189	62,824	70,530
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	125	126	126	126	125	125	127	128
T2R	4000K Lumens	7,977	15,854	23,535	31,188	39,482	46,751	54,913	63,663	71,472
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	123	127	128	127	128	127	127	129	129
T3	4000K Lumens	7,762	15,427	22,901	30,348	38,418	45,491	53,433	61,947	69,546
	BUG Rating	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B4-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	119	123	124	124	124	124	123	126	126
T3R	4000K Lumens	8,010	15,920	23,632	31,317	39,645	46,944	55,139	63,925	71,767
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	123	127	128	128	128	128	127	130	130
T4FT	4000K Lumens	7,810	15,522	23,043	30,535	38,655	45,772	53,763	62,330	69,976
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	120	124	125	125	125	124	124	126	127
T4W	4000K Lumens	7,833	15,568	23,110	30,625	38,769	45,907	53,921	62,513	70,182
	BUG Rating	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	125	126	125	125	125	125	127	127
SL2	4000K Lumens	7,813	15,528	23,052	30,547	38,670	45,790	53,784	62,354	70,003
	BUG Rating	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	120	124	125	125	125	124	124	126	127
SL3	4000K Lumens	7,758	15,419	22,889	30,332	38,398	45,468	53,406	61,916	69,511
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	119	123	124	124	124	124	123	126	126
SL4	4000K Lumens	7,662	15,228	22,605	29,955	37,921	44,903	52,742	61,146	68,646
	BUG Rating	B1-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	118	122	123	122	123	122	122	124	124
5NQ	4000K Lumens	8,169	16,235	24,101	31,938	40,431	47,874	56,232	65,193	73,190
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	126	130	131	130	131	130	130	132	133
5MQ	4000K Lumens	8,210	16,316	24,221	32,097	40,632	48,113	56,512	65,517	73,554
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	126	131	132	131	131	131	131	133	133
5WQ	4000K Lumens	8,192	16,282	24,170	32,029	40,546	48,011	56,393	65,379	73,399
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	126	130	131	131	131	130	130	133	133
SLL/ SLR	4000K Lumens	6,747	13,410	19,906	26,379	33,394	39,542	46,445	53,846	60,451
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	104	107	108	108	108	107	107	109	110
RW	4000K Lumens	8,076	16,050	23,826	31,574	39,970	47,329	55,592	64,450	72,356
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5
	Lumens per Watt	124	128	129	129	129	129	128	131	131
AFL	4000K Lumens	7,904	15,709	23,320	30,902	39,120	46,323	54,410	63,079	70,817
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G4	B4-U0-G4	B4-U0-G4
	Lumens per Watt	122	126	127	126	127	126	126	128	128

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Control Options

0-10V (DIM)
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

Photocontrol (BPC, PR and PR7)
Optional button-type photocontrol (BPC) and photocontrol receptacles (PR and PR7) provide a flexible solution to enable "dusk-to-dawn" lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PR7 receptacle.

After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a "dusk-to-dawn" period has been calculated from the photocontrol input. Specify the desired dimming profile for a simple, factory-shipped dimming solution requiring no external control wiring. Reference the After Hours Dim supplemental guide for additional information.

Dimming Occupancy Sensor (SPB and MS/DIM-LXX)
These passive infrared (PIR) sensors are factory installed in the luminaire housing. When the SPB (FSP-321 or FSP-311) or MS/DIM (FSP-211) sensor options are selected, the occupancy sensor is connected to a dimming driver and the luminaire dims when no motion is detected. After a set period of time, the luminaire turns off, and when motion is detected, the luminaire returns to full light output. Both sensors are factory preset to dim down to approximately 10% power with a time delay of five minutes. The MS/DIM sensor requires the FSIR-100 programming tool to adjust factory defaults. The SPB sensor default parameters are listed in the table below and can be configured utilizing the Sensor Configuration mobile application for iOS and Android devices. The SPB/X is configured to control only the specified number of light squares (See SPB/X Availability Table below.) An integral photocontrol can be activated with the app for "dusk-to-dawn" control or daylight harvesting - the factory default is off. Four sensor colors are available; Bronze, Black, Gray and White, and are automatically selected based on the luminaire finish as indicated by the table below.

SPB sensor finish matched to luminaire finish		
Luminaire Finish		SPB Sensor Finish*
WH	White	White
BK	Black	Black
GM	Graphite Metallic	Black
BZ	Bronze	Bronze
AP	Gray	Gray
DP	Dark Platinum	Gray

*SPB bezel color automatically selected based on luminaire finish

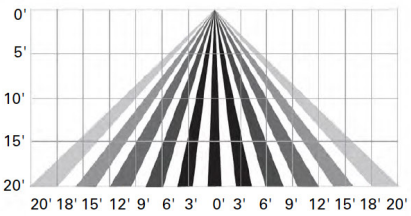
SPB/X Availability Table	
Fixture Square Count	Available SPB/X Square Count
1	Not Available
2	Not Available
3	Not Available
4	2
5	2 or 3
6	3
7	2, 3, 4 or 5
8	2, 3, 5 or 6
9	3 or 6

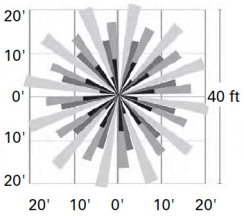
Default Program Settings (Out of the Box Functionality)

Occupancy Sensor				
Setting	MS/DIM	SPB	WaveLinx Lite (WOF / WOB)	WaveLinx (SWPD)
High Mode %	100%	100%	100%	100%
Low Mode %	10%	10%	50%	50%
Time Delay	5 min	5 min	15 min	15 min
Cut Off Delay	1 hr	1 hr	Disabled	Disabled
Photocell Enabled	No	No	Yes	Yes

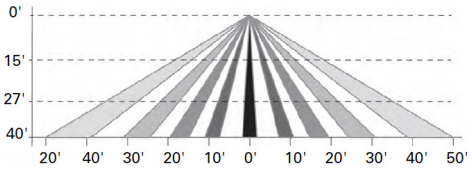
WaveLinx Wireless Control and Monitoring System
Operates on a wireless mesh network based on IEEE 802.15.4 standards enabling wireless control of outdoor lighting. WaveLinx and WaveLinx Lite sensors utilize the Zhaga Book 18 compliant 4-PIN receptacle (ZD or ZW), while the WOLC control module utilizes a 7-PIN receptacle. ZW option provides 4-PIN receptacle and control module to enable future installation of WaveLinx sensors. ZD option provides 4-PIN receptacle and sensor-ready (SR) driver to enable future installation of WaveLinx sensors, power monitoring, and advanced functionality. WaveLinx (SWPD4 to SWPD5) outdoor wireless sensors offer passive infrared (PIR) occupancy and photocell for closed loop daylight harvesting, and can be factory or field-installed. Sensors are factory preset to dim down to 50% after 15 minutes of no motion detected. Two lens options are available for mounting heights of 7' to 40'. Use the WaveLinx mobile application for set-up and configuration. At least one Wireless Area Controller (WAC) is required for full functionality and remote communication (including adjustment of any factory pre-sets). WaveLinx Lite (WOF and WOB) outdoor wireless sensors provide PIR occupancy and photocell for closed loop daylight harvesting, and can be factory or field-installed. Sensors are factory preset to dim down to 50% after 15 minutes of no motion detected. Two lens options are available for mounting heights of 7' to 40'. Use the WaveLinx Lite mobile application for set-up and configuration. WAC not required. WaveLinx Outdoor Control Module (WOLC-7P-10A) accessory provides a photocontrol enabling astronomic or time-based schedules to provide ON, OFF and dimming control of fixtures utilizing a 7-PIN receptacle. The out-of-box functionality is ON at dusk and OFF at dawn.

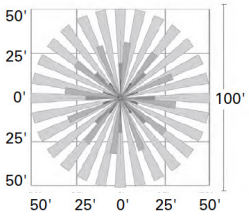
For mounting heights up to 15' (SWPD4 and WOB)





For mounting heights up to 40' (SWPD5 and WOF)





LumenSafe Integrated Network Security Camera (LD)
Cooper Lighting Solutions brings ease of camera deployment to a whole new level. No additional wiring is needed beyond providing line power to the luminaire. A variety of networking options allows security integrators to design the optimal solution for active surveillance. As the ideal solution to meet the needs for active surveillance, the LumenSafe integrated network camera is a streamlined, outdoor-ready fixed dome that provides HDTV 1080p video. This IP camera is optimally designed for deployment in the video management system or security software platform of choice.

Synapse (DIM10)
SimplySNAP integrated wireless controls system by Synapse. Includes factory installed DIM10 Synapse control module and FSP-201 motion sensor; requires additional Synapse system components for operation. Contact Synapse at www.synapsewireless.com for product support, warranty and terms and conditions.

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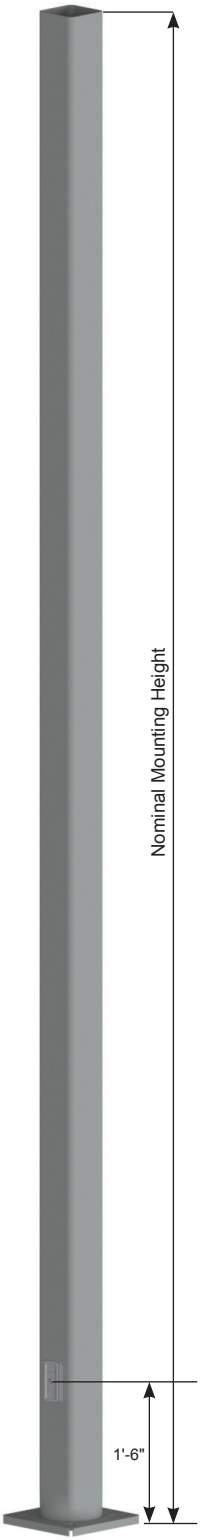
All Rights Reserved.
Specifications and dimensions subject to change without notice.

DS330
Fatigue Resistant Soft Square Steel Post

Job Name:	Client Name:
Job Location - City: State:	Created By: Date:
Product: DS330 Quote:	Customer Approval: Date:



Tenon Top*



Pole Cap - Plastic



Cross Section



Soft Square

Handhole



Full Base Cover (Standard)



Dart Square - 2T (Optional)



*Consult factory on loading criteria for pole top mounted luminaires and/or brackets.

SPECIFICATIONS

Pole Shaft - The pole shaft is fabricated from hot rolled welded steel tubing of one-piece construction with a minimum yield strength of 55 KSI.

Pole Top – A removable pole cap is provided for poles receiving drilling patterns for side-mount luminaire arm assemblies. For top mount luminaire and/or bracket consult the factory. Consult the luminaire manufacturer for correct tenon size or drill pattern. Other pole top options include pole cap only (PC) or plain top (PL) which is typical when the pole top diameter matches the necessary slip fit dimensions.

Handhole – A reinforced handhole with grounding provision is provided at 1'-6" from the base end of the pole assembly. Each handhole includes an easy to install, self-contained Swing Latch handhole cover assembly. U.S. Patent Swing Latch cover is fabricated from durable polycarbonate/ABS blend plastic. All pole assemblies are provided with a 2.50" x 5.00" rectangular handhole. Handhole dimensions are nominal.

Base Cover – A two-piece full base cover fabricated from ABS plastic is provided with each pole assembly. Additional base cover options, including the dart square (2T) cast aluminum cover, are available upon request.

Anchor Bolts - Anchor bolts conform to ASTM F1554 Grade 55 and are provided with two hex nuts and two flat washers. Bolts have an “L” bend on one end and are galvanized a minimum of 12" on the threaded end.

Hardware - All structural fasteners are galvanized high strength carbon steel. All non-structural fasteners are galvanized or zinc-plated carbon steel or stainless steel.

Finish - Standard finishes are either Galvanized (GV) or Finish Painted (FP). Additional finish options including Finish Paint over Galvanizing (FPGV) or any of the V-PRO™ Finish Coating Systems are available upon request. See the product ordering code for color options.

Design Criteria - Please reference Design Criteria Specification for appropriate design conditions.

DS330
Fatigue Resistant Soft Square Steel Post

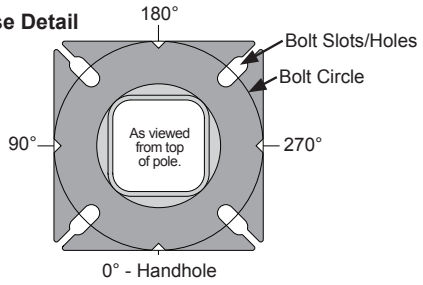
valmont STRUCTURES

Job Name:	Client Name:
Job Location - City: State:	Created By: Date:
Product: DS330 Quote:	Customer Approval: Date:

ANCHORAGE DATA

POLE		BASE PLATE				ANCHOR BOLTS		
POLE BASE SQUARE (IN)	WALL THK (GA)	BOLT CIRCLE DIA (IN)	BOLT CIRCLE ± (IN)	SQUARE (IN)	THK (IN)	DIA x LENGTH x HOOK (IN)	PROJECTION (IN)	± (IN)
4.00	11	8.50	0.50	8.25	0.750	0.75 x 17.00 x 3.00	3.50	0.25
4.00	7	8.50	0.50	8.25	0.875	0.75 x 17.00 x 3.00	3.63	0.25
5.00	11	11.00	1.00	11.00	1.000	0.75 x 17.00 x 3.00	3.75	0.25
5.00	7	11.00	1.00	11.00	1.000	0.75 x 17.00 x 3.00	3.75	0.25
6.00	7	12.00	1.00	12.50	1.000	1.00 x 36.00 x 4.00	4.25	0.25

Anchor Base Detail



DESIGNATION,LOAD AND DIMENSIONAL DATA

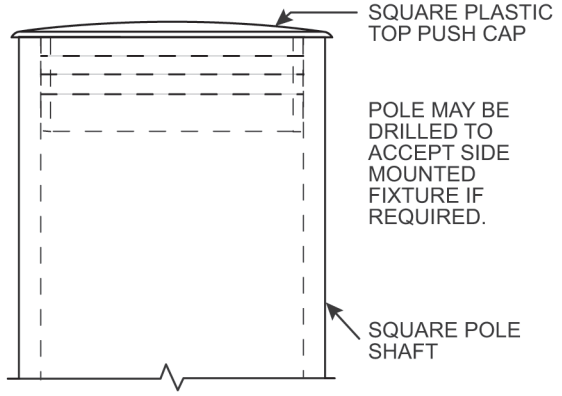
DESIGN INFORMATION							POLE DIMENSIONS[3]				DESIGNATION
	80 MPH w/1.3 GUST		90 MPH w/1.3 GUST		100 MPH w/1.3 GUST						
NOMINAL MOUNTING HEIGHT	MAX EPA[1] (SQ FT)	MAX WEIGHT[1] (LBS)	MAX EPA[1] (SQ FT)	MAX WEIGHT[1] (LBS)	MAX EPA[1] (SQ FT)	MAX WEIGHT[1] (LBS)	SHAFT BASE SQUARE[3] (IN)	SHAFT TOP SQUARE (IN)	WALL THK (GA)	STRUCTURE WEIGHT[2] (LBS)	
10'-0"	30.6	765	23.8	595	18.9	473	4.00	4.00	11	75	400Q100
12'-0"	24.4	610	18.8	470	14.8	370	4.00	4.00	11	90	400Q120
14'-0"	19.9	498	15.1	378	11.7	293	4.00	4.00	11	100	400Q140
16'-0"	15.9	398	11.8	295	8.9	223	4.00	4.00	11	115	400Q160
18'-0"	12.6	315	9.2	230	6.7	168	4.00	4.00	11	125	400Q180
20'-0"	9.6	240	6.7	167	4.5	150	4.00	4.00	11	140	400Q200
	17.7	443	12.7	343	9.4	235	5.00	5.00	11	185	500Q200
	28.1	703	21.4	535	16.2	405	5.00	5.00	7	265	500W200
25'-0"	4.8	150	2.6	100	1.0	50	4.00	4.00	11	170	400Q250
	10.8	270	7.7	188	5.4	135	4.00	4.00	7	245	400W250
	9.8	245	6.3	157	3.7	150	5.00	5.00	11	225	500Q250
	18.5	463	13.3	333	9.5	238	5.00	5.00	7	360	500W250
30'-0"	6.7	168	4.4	110	2.6	65	4.00	4.00	7	291	400W300
	4.7	150	2.0	50	N/A	N/A	5.00	5.00	11	265	500Q300
	10.7	267	6.7	167	3.9	100	5.00	5.00	7	380	500W300
	19.0	475	13.2	330	9.0	225	6.00	6.00	7	520	600W300
35'-0"	5.9	150	2.5	100	N/A	N/A	5.00	5.00	7	440	500W350
	12.4	310	7.6	190	4.2	105	6.00	6.00	7	540	600W350
40'-0"	7.2	180	3.0	75	N/A	N/A	6.00	6.00	7	605	600W400

1. Maximum EPA (Effective Projected Area) and weight values are based on side mounted fixtures only. Consult factory on loading criteria for pole top mounted luminaires and/or brackets. Variations from sizes above are available upon inquiry at the factory. Satisfactory performance of poles is dependent upon the pole being properly attached to a supporting foundation of adequate design.
2. Structure weight is a nominal value which includes the pole shaft and base plate only.
3. Belled-bottom will have reduced thickness due to the cold-working process. However, the belled-bottom meets or exceeds the structural capacity of the original square section. In addition, the rounded section provides better fatigue resistance.

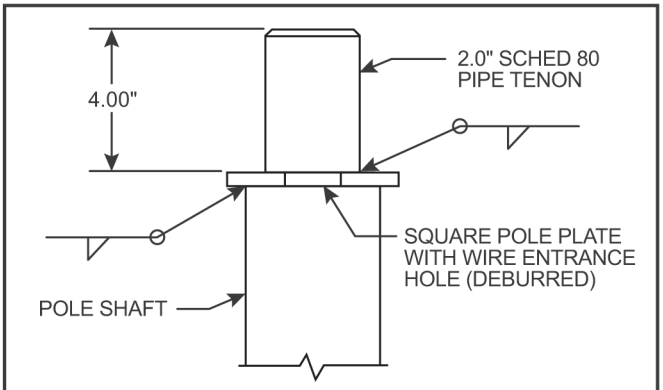
PRODUCT ORDERING CODES

MODEL	DESIGNATION	FIXTURE MOUNTING	FINISH SYSTEM	STANDARD COLOR OPTIONS	BASE COVER	ANCHOR BOLTS	SUPPLEMENTAL INFO
DS330				--	--	--	
	Select Correct Designation from the Load and Dimensional Data Chart.	**Drill Mounting (See Orientation)** D1 = (1) Drilling @ 270° D2 = (2) Drillings @ 90° & 270° D4 = (4) Drillings @ 0°, 90°, 180°, & 270° D5 = (2) Drillings @ 180° & 270° D6 = (3) Drillings @ 90°, 180°, & 270° **Tenon Mounting** P2 = 2.38" OD x 4" tenon P4 = 4.00" OD x 6" tenon P5 = 2.88" OD x 4" tenon P6 = 2.88" OD x 5" tenon P7 = 2.38" OD x 5" tenon P9 = Special Size (Specify) **Other Options** PC = Pole Cap PL = Plain Top (No Cap)	GV = Galvanized FP = Finish Painted **-----OPTIONAL-----** FPGV = Finish Paint over Galvanizing VP30 = V-PRO™ 30 System VP32 = V-PRO™ 32 System VP53 = V-PRO™ 53 System VP54 = V-PRO™ 54 System VP57 = V-PRO™ 57 System VP100 = V-PRO™ 100 System VP105 = V-PRO™ 105 System	GV = Galvanized BK = Black DB = Dark Bronze MB = Medium Bronze WH = White LG = Light Gray CB = Bronze DG = Dark Green ST = Sandstone HTG= Hunter Green SG = Slate Gray SL = Silver SC = Special Color (Specify)	FBC = Full Base Cover **-----OPTIONAL-----** 2T = Square Dart Cover	AB = With Anchor Bolts LAB = Without Anchor Bolts	

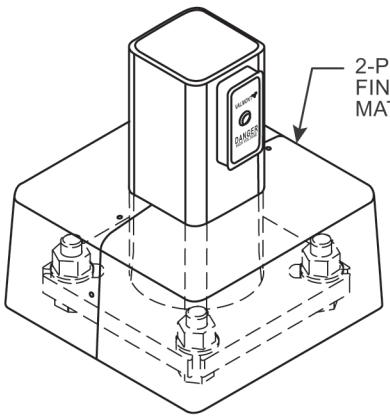
SPC7207 12/17 valmontstructures.com carries the most current spec information and supersedes these guidelines.



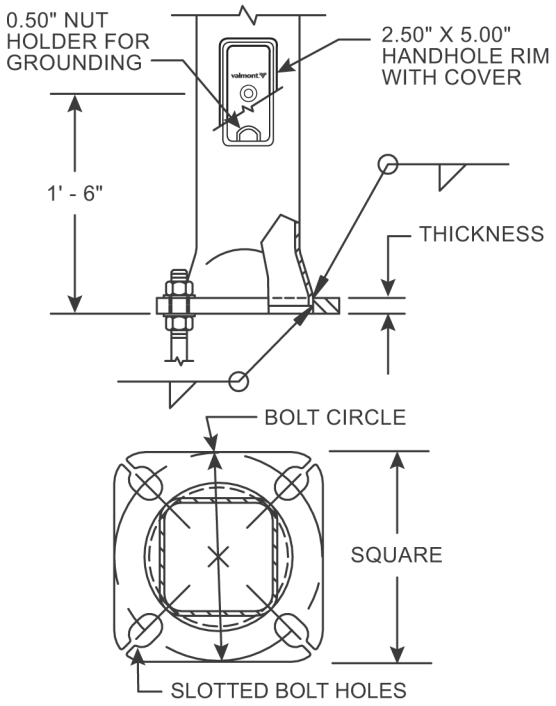
CAP DETAIL (STANDARD)



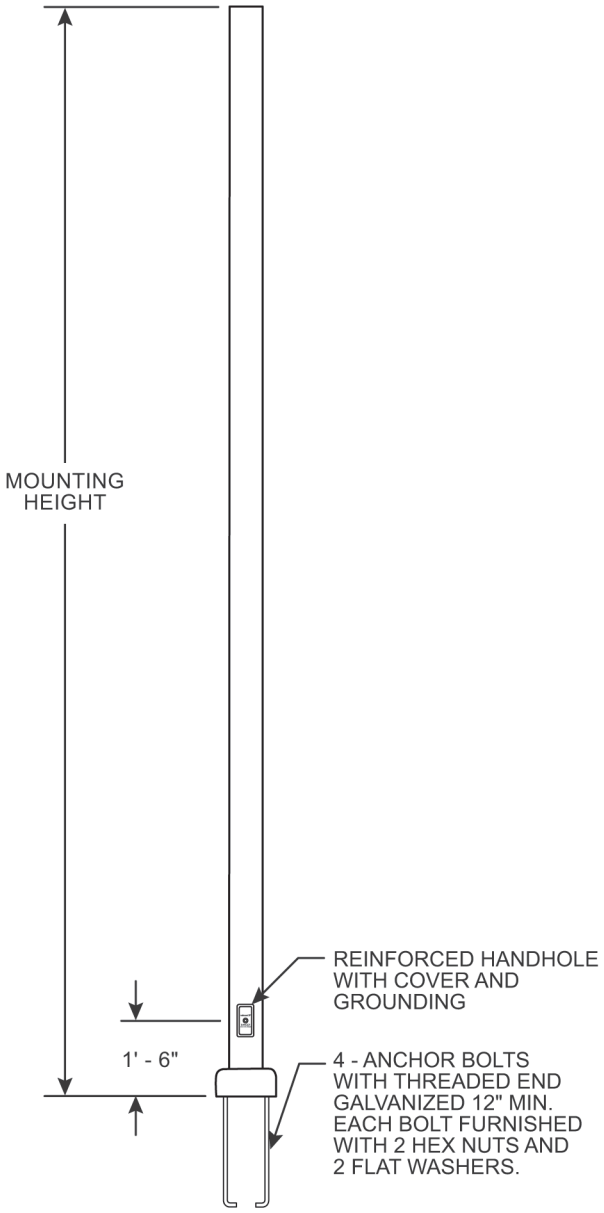
P2 TENON DETAIL (OPTIONAL)



FULL BASE COVER (STANDARD)



POLE BASE AND HANDHOLE DETAIL



DS330 POLE DETAIL

SPC7207 12/17 valmontstructures.com carries the most current spec information and supersedes these guidelines.

O. Architectural Design Narrative

Please find attached the design narrative completed by Mussachio Architects.

MUSSACHIO ARCHITECTS

30 NORTH FOREST ROAD
WILLIAMSVILLE, NEW YORK 14221
T:(716) 631-9949 F: (716) 631-0521

MARC C. MUSSACHIO, R.A.
ANTHONY C. MUSSACHIO, R.A.
www.MussachioArchitects.com

February 22, 2024

Arch. Job# 223088

Design Narrative
Hyatt Studios
1060 Westbrook Street Development,
Portland - Jetport, ME

This project consists of a 4 story, 120 guestroom Hyatt Studio Hotel. The exterior of the building is designed with clean straight parapets that create a contemporary feel. To help the scale of the building, parapet heights are varied as are the planes of portions of the building facade. Differing of the exterior materials further assists in bringing the building down to comfortable human scales. Variety and interest of the look of the building will be further enhanced with exterior materials comprising fibercement siding, flat panels and brick panels on the various wall planes.

The building entrance is highlighted with illuminated building signage and arriving guests are greeted by an outdoor patio with comfortable seating, a firepit and an anglular roof projection that provides a genial welcome to Hotel guests. Finally , a secondary guest patio located at the rear of the building provides greater privacy with its patio that also includes fire pits, tables and seating as well as grills for guests pleasure.

P:\@GMT-2019.06.06-17.00.07\2018\218068 Hampton Inn, Cooperstown, NY\Correspondence\Hilton\50% Brand Comments\50% Arch-MEP Review Resp.wpd

P. Utilities

The proposed project includes the installation of new utility connections to serve the proposed commercial building.

Water:

The project proposes a new 4" domestic water service and new 6" fire suppression service that connect independently to the existing 12" cast iron water main within Jetport Boulevard to serve the proposed building. A new hydrant is proposed within the new parking lot and there is an existing hydrant located on Westbrook Street along the project frontage.

Sewer:

The project proposes to install a new 8" domestic sewer service with a series of sewer manholes that ultimately connects to the existing 8" sewer main within Westbrook Street via a new doghouse manhole.

Stormwater:

A series of catch basins, field inlets, roof drains, and foundation drains will be installed to collect the stormwater onsite. Treatment and storage will be provided in the form of two Vegetation Underdrained Soil Filters (VUSF). These VUSF's will collect a majority of the sites stormwater and ultimately discharge to the municipal stormwater system within Westbrook Street.

UGE/T/C:

The project proposes to utilize the electric service from the existing utility pole on Westbrook Street and extend a new subsurface service into the site and tie into a proposed 9' X 9' pad mount transformer located to the southeast corner of the new building. A proposed underground secondary electrical service from the pad mount transformer will serve the proposed building. Subsurface telecom services are proposed to be installed from the same utility pole and utilize the same trench as the electric service.

Gas:

The proposed hotel building will be served by a proposed gas service from the 2" gas main within Jetport Boulevard Street.

Ability to serve letters have been sent out to the respective utility companies in accordance with the City of Portland Code of Ordinances Chapter 14 Land Use Code. Responses received thus far from the utility companies can be found attached to this section.

ACORN ENGINEERING, INC.

Charter Communications
Attn: Mr. Mark Pelletier
118 Johnson Road
Portland, Maine 04102

January 26th, 2023

Subject: 1060 Westbrook Street Development
Re: Ability to Serve Request

Mr. Pelletier:

On behalf of Giri Hotel Management, we are pleased to submit the following request for Charter Communication's ability to serve at a proposed project at 1060 Westbrook Street in Portland, Maine. The project proposes to develop the parcel into a 120-room 3-story hotel that includes 105 parking spaces and other associated landscape and utility improvements.

The project proposes to extend the existing telecom service from the existing utility pole on Westbrook Street. The new service will be subsurface and tie into the proposed building. Please see the utility plan for additional information. On behalf of the client, we are requesting the following information:

1. Additional information, such as utility mapping within Westbrook Street as well as Jetport Boulevard.
2. Easements for services currently crossing the proposed development.
3. Alternative connection locations from the property to the existing communication system.
4. Charter's proposed infrastructure improvements within the project vicinity.
5. Charter's ability to serve the project.

I have attached a Boundary/Topographic Survey created by Spurwink Surveying, Inc., to facilitate your review, as well as a preliminary utility plan developed by our office. Please do not hesitate to contact me or the office for any questions or clarifications.

Sincerely,

Peter Heil, PE
Project Manager
Acorn Engineering, Inc.

ACORN ENGINEERING, INC.

Central Maine Power Company
Attn: Katherine Dumont
162 Canco Road
Portland, Maine 04103

January 26th, 2023

Subject: 1060 Westbrook Street Redevelopment
Re: Ability to Serve Request

Mrs. Dumont

On behalf of Giri Hotel Management, we are pleased to submit the following request for Central Maine Power's ability to serve at a proposed project at 1060 Westbrook Street in Portland, Maine. The project proposes to develop the parcel into a 120-room 3-story hotel that includes 105 parking spaces and other associated landscape and utility improvements.

The project proposes to utilize the electric service from the existing utility pole on Westbrook Street and extend a new subsurface service into the site and tie into a proposed 9' X 9' pad mount transformer located to the southeast corner of the new building. A proposed underground secondary electrical service from the pad mount transformer will serve the proposed building. On behalf of the client, we are requesting the following information:

1. Additional information, such as utility mapping confirming single and three-phase power locations along Westbrook Street as well as Jetport Boulevard.
2. Existing easements for underground services currently crossing the proposed development.
3. Alternative connection locations from the development to the existing system.
4. CMP's proposed infrastructure improvements within the project vicinity.
5. CMP's ability to serve the project.
6. Access requirements to the CMP meters.
7. Please send a list of communication/telecom providers that are located on the utility poles located in front of 1060 Westbrook Street.

I have attached a Boundary/Topographic Survey created by Spurwink Surveying, Inc., to facilitate your review, as well as a preliminary utility plan developed by our office. Forthcoming electrical loading computations and final metering will be performed by the project's M.E.P designer &/or architect. Please do not hesitate to contact me or the office for any questions or clarifications.

Sincerely,

Peter Heil, PE
Project Manager

ACORN Engineering, Inc. • www.acorn-engineering.com
207-775-2655 • PO Box 3372 • Portland • Maine • 04104

From: Dumont, Katherine
To: Zach Stevens; Pete Heil; DUPERRE, PAUL; David Horne
Subject: CMP Three Phase Service Process and Ability to Serve Letter- 1060 Westbrook St Portland Me.
Date: Friday, January 26, 2024 12:24:55 PM
Attachments: image001.jpg
image001.png
Easement_Information_Worksheet.doc
Standard Easement Sample.pdf
blank W9.pdf
August 2022 EDET.xlsx

Zachary Stevens
Acorn Engineering, Inc.
PO Box 3372
Portland, ME 04104

RE: Giri Hotel Management
1060 Westbrook St Portland, Maine
Letter of Ability to Serve Request

SAP TBD
Project Description:

The following request for the ability to serve letter for your project that proposes to develop the parcel of land into a 120-room 3-story hotel that includes 105 parking spaces. The project located at 1060 Westbrook Street in Portland, Maine. CMP has the ability to serve the proposed project in accordance with our CMP Handbook (web link below). We can provide you the desired pad or pole mounted transformers per your request and city approval, in accordance with our CMP Handbook of Standard Requirements. If you have any questions on the process, or need help in completion of the documents, please contact CMP at 800-565-3181.

Here is our typical process for getting your three phase or CT rated single phase service installed. If you have any questions, please let us know. The underlined links will redirect you to the appropriate site for additional information.

Service Milestones for Three Phase Services and CT Rated Single Phase Services. There are additional requirements for primary metered Solar Service Installations listed in the Chapter 324 Interconnections section below. Please refer to CMP Installation Checklists for other installations.

- Call 800-750-4000 option 4 to establish a new account (if needed) and an SAP work order. Please provide both of these to me.
- Submit Load information. Please complete the attached EDET (excel file) using load information. Please complete this and email back to me. If the loads are over 500 kw, more in depth load studies may be required with our Distribution Planning and Transmission Planning Departments. Be advised that these will involve more detailed load information, a load study agreement (signed contract), as well as other items. This additional study process may add up to two additional months to completion of the job.

Submit the easement information worksheet, including where any CMP structures may be on ANY private property (Poles, Wires, Anchors). You are responsible for obtaining all information for all required easements. Please complete this form and either email or fax back to me.

- Submit any electronic drawings (PDF (preferred) or DWG files) of the site layout and proposed electrical connections.
- For Primary Metered installations (including PV), please have the access road in for pole staking.
- Preliminary meetings with CMP Advisor and Engineer to determine details of job (I will need to schedule with your electrician/contractor-please let me know who this is)
- Field planner design appointment scheduled once the preliminary information is complete. This will allow us to cost out the job and develop a CMP Invoice. The invoice is typically generated 5-6 weeks after the design appointment. This expires after 90 days from the invoice date.
- Submit completed W9 so that your bill can be properly processed. This is a new CMP process.
- CMP submits invoice to the customer for payment (typically via email). Payment received from customer.
- Easements (based on easement information worksheet) sent out, signed and originals returned to CMP.
- Job scheduled for completion after the electrical inspection has been received.

This process can take several months, depending upon several factors including transformer or materials delivery, return of completed paperwork, and other jobs in the system that may be ahead of yours. In addition, contact with the other utilities, including telephone and cable, should be commenced as soon as practical. They may have additional work or charges in addition to the CMP work required to bring your project on line.

As you may be aware, there are global supply chain issues impacting the utility industry. CMP is closely monitoring and managing their inventory in order to serve our customers. Larger padmount transformers may not be readily available for the date that you will need to be energized. Please consider this as part of your construction plan. The energy service advisor will continue to work closely with you and let you know as soon as the transformer becomes available. Should you have any questions or concerns throughout this process, please do not hesitate to contact your ESA directly at the number or email provided.

Please complete the attached forms (the specific instructions are on each form) and email them back to me at your earliest convenience.

For your convenience, here is a link to the CMP Website which contains our Handbook with details on most service requirements: CMP Handbook of Standard Requirements An additional resource is our Distribution Construction Standards: CMP Distribution Construction Standards CMP Distribution Construction Standards.

You will be responsible for installing the customer connections, conduits, and metering in accordance with the CMP Handbook of Standard Requirements The transformer will be sized based on your submitted load sheets.

Your deposit amount will be typically based on an estimated two month bill, calculated from your completed load sheet unless otherwise determined by CMP.

In addition, we have recently added on an online map that shows single phase and three phase power locations within CMP. Here is that link: CMP ArcGIS Information

Metering:

All metering (including locations) must be preapproved by CMP. If you have any questions, please consult the CMP Handbook of Standard Requirements

Chapter 324 Interconnections:

Please be advised that if you plan to install solar/wind/hydro generation, you must complete an application under the MPUC mandated Chapter 324 Interconnection Standards. If you go to Chapter 324 Interconnection Standards and follow the instructions for the Small Generator Interconnection Procedures, CMP can do this work in parallel to your service request that will be handled by me. If you project is under 660 KW You will be able to have a Customer Net Energy Billing contract. Information concerning Customer Net Energy Billing can be accessed thru the Chapter 324 website or by clicking here: Net Energy Billing

Reallocation/Line Extensions:

Recently, changes were made to the three-phase construction policy, which require CMP to reallocate construction costs paid by customers. If applicable, those projects identified as "developments" do not qualify for reallocation of funds. Please see this document at our website for details about the reallocation conditions. Any reallocation charges will be specifically denoted on your invoice. The website address for this is: PolyphaseLineExtension.

This line extension will be part of Central Maine Power's distribution system. In the event the property served under this Agreement is sold or otherwise conveyed, all rights and obligations of the Agreement shall stay with the property. Please note that if you rent or lease this property to another and you want to receive the reimbursement payments, you must make special arrangements with the Central Maine Power Company. Otherwise, any reimbursement payments will be sent to the "Customer" taking service at the service location.

Electricity Supplier Information:

Central Maine Power Company (CMP) will provide your facility with electric delivery service. If you don't already have a provider, you will need to make arrangements with a competitive electricity provider in order to receive electricity supply for your facility. In the event you fail to choose a competitive electricity provider, you will receive Standard Offer service arranged by the Maine Public Utilities Commission. If you wish to be served by a competitive electricity provider immediately upon establishment of delivery service, you must arrange for this service directly through your chosen

competitive electricity provider, who must enroll your account no later than 5 PM on the business day prior initiation of delivery service by CMP. An up-to-date list of competitive suppliers can be found at the:

1. Maine Public Utilities Commission (MPUC) web site- **Maine PUC**
2. By calling the MPUC at (207) 287-3831

Attachments:

Excel Load Sheet (EDET)
Easement Worksheet and Sample Standard Easement
W9

Please do not hesitate to reach out with any questions.

Kind Regards,
Kathy

Katherine Dumont
Energy Service Specialist
162 Canco Rd
Portland, ME 04103

207-242-5744
katherine.dumont@cmpco.com

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ACORN ENGINEERING, INC.

Consolidated Communications
Attn: Mr. Jay Cunha
5 Davis Farm Road
Portland, Maine 04103

January 26th, 2023

Subject: 1060 Westbrook Street Redevelopment
Re: Ability to Serve Request

Mr. Cunha:

On behalf of Giri Hotel Management, we are pleased to submit the following request for Consolidated Communication's ability to serve at a proposed project at 1060 Westbrook Street in Portland, Maine. The project proposes to develop the parcel into a 120-room 3-story hotel that includes 105 parking spaces and other associated landscape and utility improvements.

The project proposes to extend the existing telecom service from the existing utility pole on Westbrook Street. The new service will be subsurface and tie into the proposed building. Please see the utility plan for additional information. On behalf of the client, we are requesting the following information:

1. Additional information, such as utility mapping within Westbrook Street as well as Jetport Boulevard.
2. Easements for services currently crossing the proposed development.
3. Alternative connection locations from the property to the existing communication system.
4. Consolidated's proposed infrastructure improvements within the project vicinity.
5. Consolidated's ability to serve the project.

I have attached a Boundary/Topographic Survey created by Spurwink Surveying, Inc., to facilitate your review, as well as a preliminary utility plan developed by our office. Please do not hesitate to contact me or the office for any questions or clarifications.

Sincerely,

Peter Heil, PE
Project Manager
Acorn Engineering, Inc.

ACORN ENGINEERING, INC.

Department of Public Works
Attn: Bradley Roland
212 Canco Road
Portland, Maine 04103

January 26th, 2023

Subject: 1060 Westbrook Street Redevelopment
Re: Ability to Serve Request

Mr. Roland:

On behalf of Giri Hotel Management, we are pleased to submit the following request for Department of Public Works ability to serve at a proposed project at 1060 Westbrook Street in Portland, Maine. The project proposes to develop the parcel into a 120-room 3-story hotel that includes 105 parking spaces and other associated landscape and utility improvements.

The project proposes to install a new 8" domestic sewer service with a series of sewer manholes that ultimately connects to the existing 8" sewer main within Westbrook Street via a new doghouse manhole. Please see our attached Utility Plan for additional information. Based upon Section 4 of the *Maine Subsurface Wastewater Disposal Rules*, the table below outlines the proposed flow.

Estimate of Anticipated Daily Flows			
Development	Unit Size	Gallons per Day per Unit	Total Gallons per Day (GPD)
Existing Flow			
Vacant	N/A	N/A	0
Total Gallons per Day (Existing)			**0**
Proposed Flow			
Hotel	120 Units / 10 Employees	100 GPD/ Unit 12 GPD/ Employee	12,120 GPD
Total Gallons per Day (Proposed)			**12,120 GPD**
Net Change			**+12,120 GPD**
*Values based on Chapter 241 State of Maine: Subsurface Wastewater Disposal Rules, most recent edition			

The proposed project is anticipated to increase the net flow by approximately 12,120 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. We will provide any changes to the anticipated sewage demand as the project design progresses.

On behalf of the client, we are requesting the following information:

1. Any additional information, such as utility mapping within Westbrook Street as well as Jetport Boulevard and confirmation of the location and size of the services to the existing property and the size and material of the main within Westbrook 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 Boundary/Topographic Survey created by Spurwink Surveying, Inc., to facilitate your review, as well as a preliminary utility plan developed by our office. Please do not hesitate to contact me or the office for any questions or clarifications.

Sincerely,



Peter Heil, PE
Project Manager
Acorn Engineering, Inc.

ACORN ENGINEERING, INC.

Portland Water District
Attn: MEANS Department
225 Douglass Street
Portland, Maine 04104

January 26th, 2023

Subject: 1060 Westbrook Street Redevelopment
Re: Ability to Serve Request

To Whom It May Concern:

On behalf of Giri Hotel Management, we are pleased to submit the following request for Portland Water Districts ability to serve at a proposed project at 1060 Westbrook Street in Portland, Maine. The project proposes to develop the parcel into a 120-room 3-story hotel that includes 105 parking spaces and other associated landscape and utility improvements.

The project proposes a new 2" domestic water service and new 6" fire suppression service that connect independently to the existing 12" cast iron water main within Jetport Boulevard to serve the proposed building. Based upon Section 4 of the *Maine Subsurface Wastewater Disposal Rules*, the table below outlines the proposed flow.

Estimate of Anticipated Daily Flows			
Development	Unit Size	Gallons per Day per Unit	Total Gallons per Day (GPD)
Existing Flow			
Undeveloped	N/A	N/A	0
Total Gallons per Day (Existing)			**0**
Proposed Flow			
Hotel	120 Units / 10 Employees	100 GPD/ Unit 12 GPD/ Employee	12,120 GPD
Total Gallons per Day (Proposed)			**12,120 GPD**
Net Change			**+12,120 GPD**
*Values based on Chapter 241 State of Maine: Subsurface Wastewater Disposal Rules, most recent edition			

The proposed project is anticipated to increase the net flow by approximately 12,120 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. We will provide any changes to the anticipated water demand as the project design progresses.

On behalf of the client, we are requesting the following information:

1. Additional information, such as utility mapping within Westbrook Street as well as Jetport Boulevard and confirmation of the location and size of the services to the existing property.
2. PWD's proposed infrastructure improvements within the project vicinity.
3. Flow data for adjacent hydrants.
4. PWD's ability to serve the project.
5. Any project related offsite water main improvements.

I have attached a fixture count and a Boundary/Topographic Survey created by Spurwink Surveying, Inc., to facilitate your review, as well as a preliminary utility plan developed by our office. Please do not hesitate to contact me or the office for any questions or clarifications.

Sincerely,



Peter Heil, PE
Project Manager
Acorn Engineering, Inc.

Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

February 15, 2024

Peter Heil
Acorn Engineering
P.O. Box 3372
Portland, ME 04104

Re: 1060 Westbrook Street, PO
Ability to Serve with PWD Water

Dear Mr. Nelsen:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on January 26, 2024. Based on the information provided per plans dated February 2, 2024, 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 4-inch domestic service with a 3-inch meter may be installed from the water main in Jetport Boulevard. The service should enter through the property's frontage on Jetport Boulevard at least 10-feet from any side property lines. An approved testable double-check backflow prevention device must be installed on the domestic service line directly after the meter prior to service activation.
- A new 6-inch fire service may be installed from the water main in Jetport Boulevard. The service should enter through the property's frontage on Jetport Boulevard at least 10-feet from any side property lines. An approved testable double-check backflow prevention device must be installed on the fire service line directly before the sprinkler riser prior to service activation.
- The irrigation system has not been included in the sizing of this service and meter.

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.

225 DOUGLASS STREET P.O. BOX 3553 PORTLAND, MAINE 04104-3553
PHONE: 207.774.5961 FAX: 207.761.8307 WEB: WWW.PWD.ORG

Existing Site Service

According to District records, the project site does not currently have existing water service.

Water System Characteristics

According to District records, there is a 12-inch diameter ductile-iron water main in Narragansett Street and a public fire hydrant adjacent to the site. The estimated static pressure in the area is 89 psi.

Public Fire Protection

The installation of new public hydrants to be accepted into the District water system will most likely not be required. It is your responsibility to contact the City of Portland Fire Department to ensure that this project is adequately served by existing and/or proposed hydrants.

Domestic Water Needs

The data noted above indicates there should be adequate pressure and volume of water to serve the domestic water needs of your proposed project. Based on the high water pressure in this area, we recommend that you consider the installation of pressure reducing devices that comply with state plumbing codes.

Private Fire Protection Water Needs

You have indicated that this project will require water service to provide private fire protection to the site. Please note that the District does not guarantee any quantity of water or pressure through a fire protection service. Please share these results with your sprinkler system designer so that they can design the fire protection system to best fit the noted conditions. If the data is out of date or insufficient for their needs, please contact MEANS to request a hydrant flow test and we will work with you to get more complete data.

Should you disagree with this determination, you may request a review by the District's Internal Review Team. Your request for review must be in writing and state the reason for your disagreement with the determination. The request must be sent to MEANS@PWD.org or mailed to 225 Douglass Street, Portland Maine, 04104 c/o MEANS. The Internal Review Team will undertake review as requested within 2 weeks of receipt of a request for review.

If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District



Robert A. Bartels, P.E.
Senior Project Engineer

ACORN ENGINEERING, INC.

Unitil Service Corp.
Attn: Scott Carpenter
376 Riverside Industrial Parkway
Portland, Maine 04103

January 26th, 2023

Subject: 1060 Westbrook Street Redevelopment
Re: Ability to Serve Request

Dear Mr. Carpenter:

On behalf of Giri Hotel Management, we are pleased to submit the following request for Until Service Corporation's ability to serve at a proposed project at 1060 Westbrook Street in Portland, Maine. The project proposes to develop the parcel into a 120-room 3-story hotel that includes 105 parking spaces and other associated landscape and utility improvements.

The project proposes to tap a new gas service from the exisitng 2" gas main within Jetport Boulevard to serve the proposed building. On behalf of the client, we are requesting the following information:

1. Any additional gas lines within Westbrook Street as well as Jetport Boulevard.
2. Confirmation of the existing building service tap location & size.
3. Unitil's proposed infrastructure improvements within the project vicinity.
4. Unitil's ability to serve the project.
5. Any project related offsite main improvements.

I have attached a Boundary/Topographic Survey created by Spurwink Surveying, Inc., to facilitate your review, as well as a preliminary utility plan developed by our office. Please do not hesitate to contact me or the office for any questions or clarifications.

Sincerely,

Peter Heil, PE
Project Manager
Acorn Engineering, Inc.

Q. Construction Management Plan

Project Address: 1060 Westbrook Street, Portland, Maine

Project Description:

The project proposes to develop the parcel into a 120-Room 3-story Hyatt Studios, with a 106-space parking lot, and other site and utility improvements.

Project Team Summary:

Owner:	Giri Hotel Management
General Contractor:	TBD
Civil Engineer:	Acorn Engineering, Inc.
Architect:	Mussachio Architects
Structural Engineer:	TBD

The Owner/GC and all subcontractors will work with the City of Portland and adjacent landowners to minimize any 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 ordinance 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. The GC will prepare a Construction Management Plan their means and methods 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 preconstruction 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. Sections 14-530 and 13-532 will be complied with all necessary permits will be obtained prior to work.

1. Street Opening and Street Occupancy Permits:

   Required permits regarding street opening and occupancy will be obtained from the Department of Public Works. The requests shall conform to the approved Construction Management Plan.

2. Blasting:

   Some blasting is anticipated and 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 Westbrook Street frontage. Additional signage necessary for communication shall be provided but will be temporary and removed upon completion of the project. The contact information for the project personnel is:

Ankur Patel – Giri Hotel Management
(508)-345-3305

GC and Subcontractor information will be posted along Westbrook Street frontage once contracted.

E. Construction Schedule

The GC shall submit a construction timeline at or prior to the preconstruction 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 1 and May 31, 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 1 to August 31, construction activity may continue until 8 pm. No construction activity shall begin before 8 am on a Saturday, Sunday, or legal holiday. Extended hours or night work may be requested for special circumstances and street utility work 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:	Fall/Winter 2023
Project End Date:	Summer/Fall 2025

A more detailed work schedule shall be provided by the GC at or before the pre-construction meeting with the City.

F. Security & Public Safety

1. The GC will provide all 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 Westbrook Street.

3. Traffic Control Plans

Construction activity that impacts the existing public street system must be controlled to protect the safety of the construction workers and all modes of the traveling public. The contractor shall submit a satisfactory "Maintenance of Traffic" (MOT) plan prior to any street opening permit approval. This document shall contain all pertinent information from the Maine Department of Transportation's Traffic Control Plan Standard Specification 652.3.3.

The MOT will address the work required for utility connections in Westbrook Street. Traffic will be channelized utilizing drums and cones. Proper signage will be installed prior to 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 Westbrook Street during utility connections and/or detour a mode of traffic when absolutely necessary for safety. All requests shall be subject to City approval. MOT plans shall employ the appropriate techniques and devices as called for in the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). In addition:

- Construction speed signing may be used as needed to slow traffic.
- Traffic Control signs shall not be placed where they would create any obstructions to bicycles or pedestrians.
- Flaggers will be utilized when necessary.

All existing modes of travel in the work zone area shall be accommodated if impacted by the activity. The safe passage of pedestrians, bicyclists, transit providers, and motorists are of equal importance when planning and laying out the work zone; no pre-existing travel mode may be eliminated without the express approval of the Department of Public Works. The MOT should also address on-street parking impacts, including deliveries and parking for adjoining businesses and property owners, analysis of roadway capacity or diversion capacity if street closure or change to roadway capacity is required, and coordination with other on-going or future construction or utility projects in the vicinity.

- Traffic control bicycle and pedestrian facilities or routes through work zones shall be maintained until the bicycle and pedestrian facilities or routes are ready for safe operation. Traffic control will not be removed to allow 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.

Use of public parking spaces shall not be permissible. 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 Control and Preservation of Trees

1. The Contractor shall install all erosion and sedimentation controls as outlined in the plan set, 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. Existing landscaping will be preserved to the greatest extent practical. Please refer to the plan set for additional locations, specifications, and details.

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 on site 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 construction:

    - Gravel & Stone – Approx. 2,000 CY. Earthwork subcontractor(s) pit to project site.
    - Hot Mix Asphalt – Approx. 600 tons. Paving subcontractor(s) pit to project site.

Final calculations should be confirmed by the contractor.

L. Dewatering Plans

1. A basic dewatering plan for any construction work is required and shall be submitted by the Contractor. The plan must cover construction sites where groundwater is not expected but the impact of rainwater may require dewatering. The plan must include operating procedures, equipment to be used, including filters, erosion and sediment control measures, or other methods of removing sediment from approved discharges.

2. For construction work that will require frequent dewatering of groundwater from site, a dewatering plan must be prepared by the Contractor and approved by the Department of Public Works. Groundwater and/or soil testing may be required to determine course of

action if treatment is necessary. Approval for all discharges to City infrastructure is required. The proposed plan must address the following:

- Project duration, discharge location, storage equipment on-site, dewatering schematic, and emergency contact.
- General requirements include trained staff on-site for all approve discharges and required site log for documentation of all discharges.
- Storage and/or treatment process should include proper settling time and maintain proper use of filtering medium as required.
- Contingency/maintenance plan for all dewatering equipment devices and filtration mediums.

Any water that is removed from an excavation must be pumped from a perforated device buried in crush stone prior discharge and/or prior to storage and treatment. There will be no discharge allowed during precipitation events.

M. Special Measures as Necessary

No special measures are necessary for the proposed reconstruction.

R. Solid Waste Disposal

The proposed building will utilize a proposed solid waste container located on the southwestern corner of the proposed parking lot. A private hauler will be contracted for removal.

S. Parking Analysis

Per Land Use Code Section 19 Off Street Parking Table 19-A Off-Street Parking Minimums: 1 parking space per 4 guest rooms is required. The project proposes to construct a Hotel that contains 120 rooms, therefore is required to provide 30 parking spaces onsite. Six bicycle parking spaces will also be required onsite.

The project proposes providing 106 parking spaces, which is 76 parking spaces over the minimum requirements per the Land Use Code. The proposed parking area will be utilized for guests, staff, as well as "park and fly" patrons. We believe the surplus of parking is appropriate due to the proximity of the Portland Jetport. It is the client's intent to provide long-term parking spaces for guests that plan to travel.

Please also refer to Section T: Traffic Impact Study, which also provides additional on parking generation information, including ITE Parking Generation Rates showing the hotel would require 96 parking spaces based on the fitted curve equation. The 106 parking spaces currently proposed would be 10% greater than the ITE Parking Generation Rates identified for the hotel use only, and not including "park and fly" patrons.

Memorandum

To: Ankur Patel
Giri Hotel Management

Date: April 11, 2024

Project #: 55751.00

From: Jennifer Conley, PE, PTOE

Re: Jetport Hotel Traffic Impact Study

Introduction

Vanasse Hangen Brustlin, Inc. (VHB) was requested to provide transportation planning and engineering consulting services in support of a proposed 120-room hotel at 1060 Westbrook Street in Portland, Maine. The project is proposed to occupy an undeveloped parcel of land in close proximity to the Portland International Jetport. This memorandum has been prepared to summarize the traffic information relating to the area roadways and the expected trip generation of the proposed development.

Existing Conditions

The existing conditions in the vicinity of the proposed development were reviewed. The proposed development is to occur to the north of the intersection of Westbrook Street and Jetport Boulevard (shown in Figure 1). A review of the existing conditions focused on the project site and transportation network access to and from the site including the following intersections identified by the City of Portland:

- Westbrook Street and Jetport Boulevard (unsignalized)
- International Way and Jetport Boulevard (unsignalized)

Figure 1 Study Area



Roadway and Intersection Characteristics

The hotel driveway is proposed to tie into, and form the fourth leg of, the intersection of Westbrook Street and Jetport Boulevard. All study area intersections are unsignalized. International Way and Jetport Boulevard are two entrances to the Portland International Jetport and are classified as Major Collector Roads. Westbrook Street is classified as a Townway and connects outgoing vehicles from the airport back to Jetport Boulevard.

Pedestrian and Bicycle Facilities

Sidewalks are currently provided on the east side of Westbook Street, forming a pedestrian connection between the Jetport and Jetport Boulevard. A crosswalk is provided across the south leg of the Westbrook Street and Jetport Boulevard intersection and connects to the sidewalk on the south side of Jetport Boulevard until the Embassy Suites driveway where it crosses to the north side of Jetport Boulevard.

Sidewalks are provided on the northwest side of Jetport Boulevard from the Embassy Suites to International Parkway and along International Parkway to Congress Street. At the intersection of Jetport Boulevard and International Parkway, in addition to the sidewalk on the northwest side of Jetport Boulevard, sidewalks are also provided on the northeast side of International Parkway north of the intersection, and both sides of Jetport Boulevard west of the intersection and both sides of International Parkway into the Jetport. Crosswalks are only provided across Jetport Boulevard at this intersection. There are currently no designated bicycle facilities in the site area. However, Westbrook Street to the north of the site is a bicycle friendly roadway with lower traffic volumes which provides access to Congress Street further north.

Public Transportation

The Greater Portland Metro provides bus service with a stop to the west of the proposed site on Jetport Boulevard in the southwest direction for Route 5 - Maine Mall. Route 5 serves riders between downtown Portland and the Maine Mall area with service to the Portland International Jetport seven days a week.

Crash History

Crash data was obtained from MaineDOT for the most recent three-year period (2020-2022). MaineDOT defines High crash locations (HCLs) as locations with a minimum of 8 or more crashes in the most recent three year period and a critical rate factor (comparison of the intersection crash rate to the statewide average) of 1.0 or greater. There are no HCLs for the roadways or intersections surrounding the project site. Most crashes in the study area were property damage only. Table 1 presents the crash data for the intersections surrounding the project site.

Table 1 Crash Data (2020-2022)

Intersection	Total Crashes	Critical Rate Factor
Jetport Boulevard and International Way	4	1.02
Airport Exit Road and International Way	1	0.00

Source: MaineDOT Crash Data

Existing Traffic Volume Data

Turning Movement Counts (TMCs) were collected on December 5, 2023, between 7AM – 9AM and 4PM – 6PM at the following study area intersections:

- Jetport Boulevard and International Way
- Jetport Boulevard and Westbrook Street

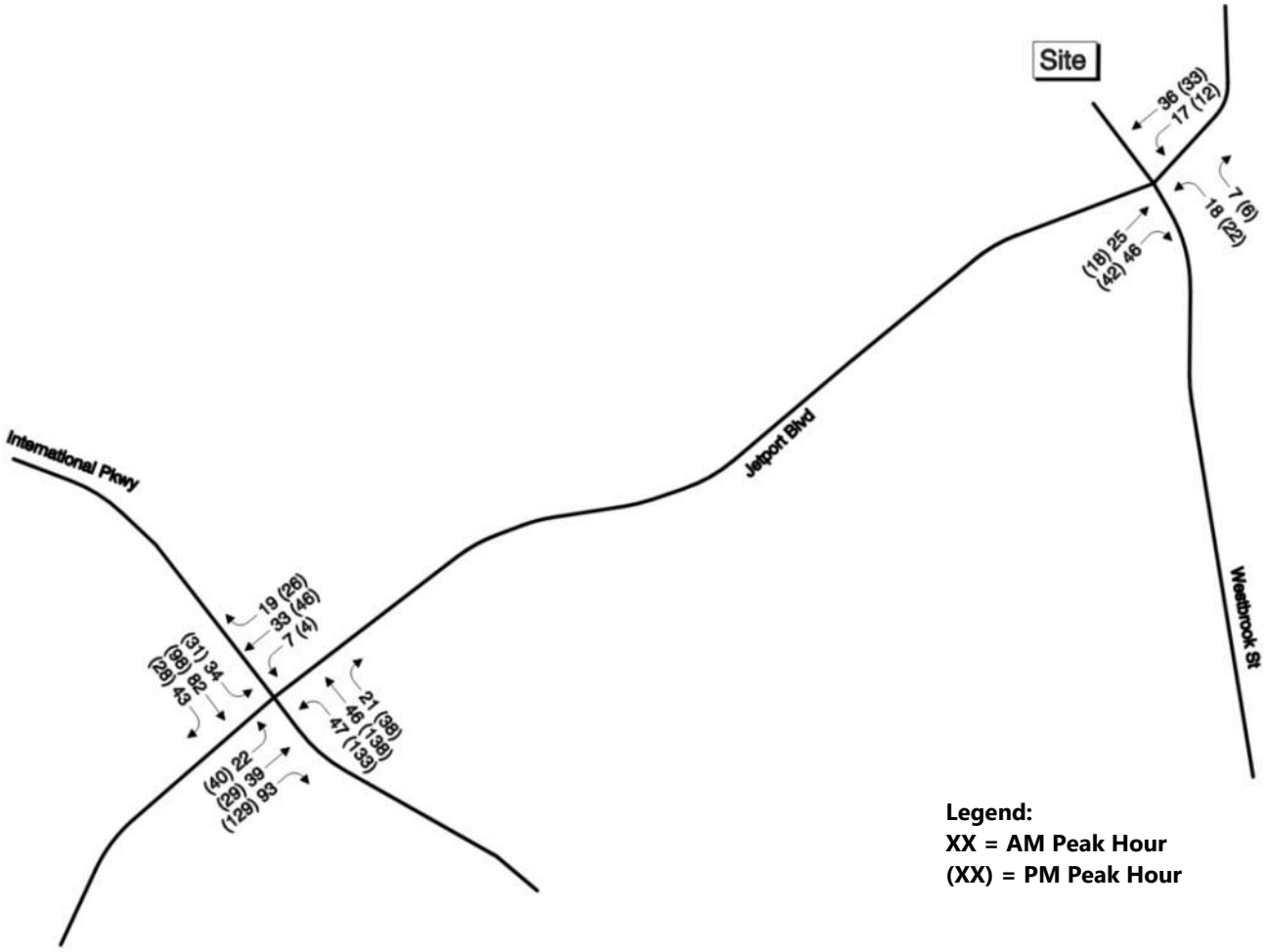
Additional turning movement counts were collected at Jetport Boulevard and International Way from 6AM-6PM on the same day in order to address a concern raised by Metro.

The peak hours were determined as 7:00AM-8:00AM and 4:00PM-5:00PM at the intersection of Jetport Boulevard and Westbrook Street. At the intersection of Jetport Boulevard and International Way, where additional count data was available, 8:15AM-9:15AM and 2:00PM-3:00PM were found to the peak hours. To analyze this non-typical afternoon peak hour at both intersections, the data collected at Jetport Boulevard and Westbrook Street was proportionally increased to match Jetport Boulevard and International Way intersection volumes.

Weekly group mean factors provided by MaineDOT were used to adjust existing traffic volumes to represent the 30th highest hour of the year. As a result, the raw volumes collected in December 2023 were adjusted by a factor of 1.12. The existing weekday morning and weekday afternoon peak hour traffic volume networks are summarized in Figure 2.

Memorandum

Figure 2 Existing Conditions Traffic Volumes



Future Conditions

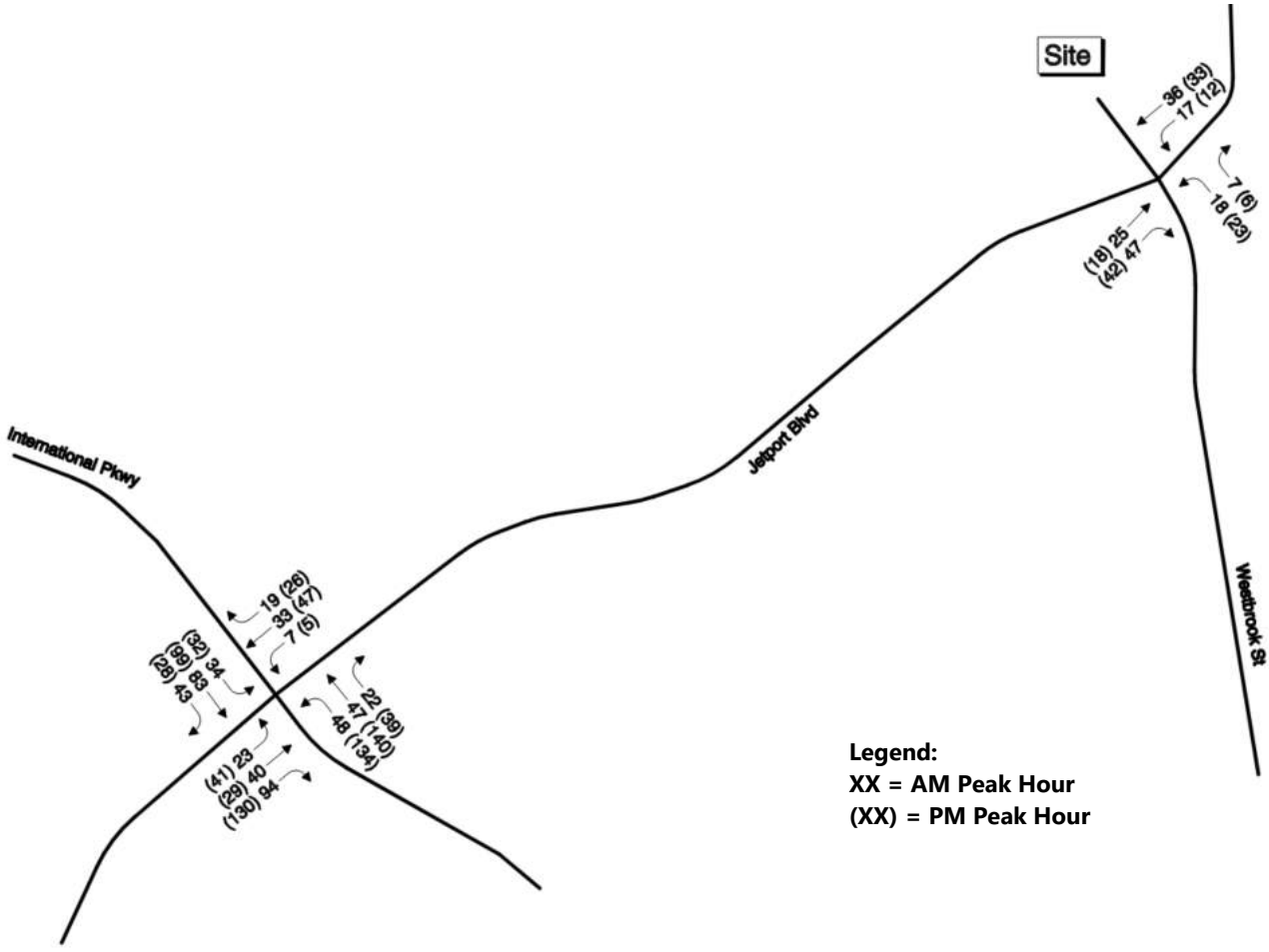
Typically, transportation conditions in the study area can be expected to change in the future due to potential development/growth and planned transportation infrastructure improvements in the area. A two-year planning horizon was used to assess the study area intersections with the planned development. The traffic volumes were projected to the year 2026 to reflect growth without ("No-Build") and with ("Build") the development project. The 2026 No-Build projected traffic volumes include generalized regional traffic growth. The anticipated site-generated traffic volumes superimposed upon the 2026 No-Build peak hour traffic volume network reflect the 2026 Build peak hour conditions.

Memorandum

No-Build Traffic Volumes

2024 Existing traffic volume networks in Figure 2 were increased by a growth rate of one half percent (0.5%) per year for two years (1% total growth) through 2026. The 2026 No-Build traffic volumes for the weekday AM and PM peak hours are shown in Figure 3.

Figure 3 2026 No-Build Traffic Volumes



Project Trip Generation

Trip generation estimates for the Project are based on standard Institute of Transportation Engineers' (ITE) data. The ITE Trip Generation Manual categorizes various land uses and provides weekday daily, weekday AM peak hour, and weekday PM peak hour unadjusted vehicle trip generation estimates for each use. Trip generation estimates for the proposed hotel were projected using data published in the ITE Trip Generation Manual based on the metrics for Land Use Code 310 – Hotel.

To understand the magnitude of the proposed development, VHB estimated the trip generation of the proposed development utilizing the ITE Trip Generation Manual (11th Edition) using average rates and fitted curve equations. The results of the inquiry are presented in Table 2.

Table 2 ITE Trip Generation

	Period				
Land Use	**AM Peak Hour of Adjacent Street**	**AM Peak Hour of Generator**	**PM Peak Hour of Adjacent Street**	**PM Peak Hour of Generator**	**Saturday Peak Hour**
Total Trip Ends, Hotel					
By Average Rates	55	64	71	72	86
By Fitted Curve	53	69	61	72	89

Source: ITE Trip Generation Manual - LUC 310 Hotel

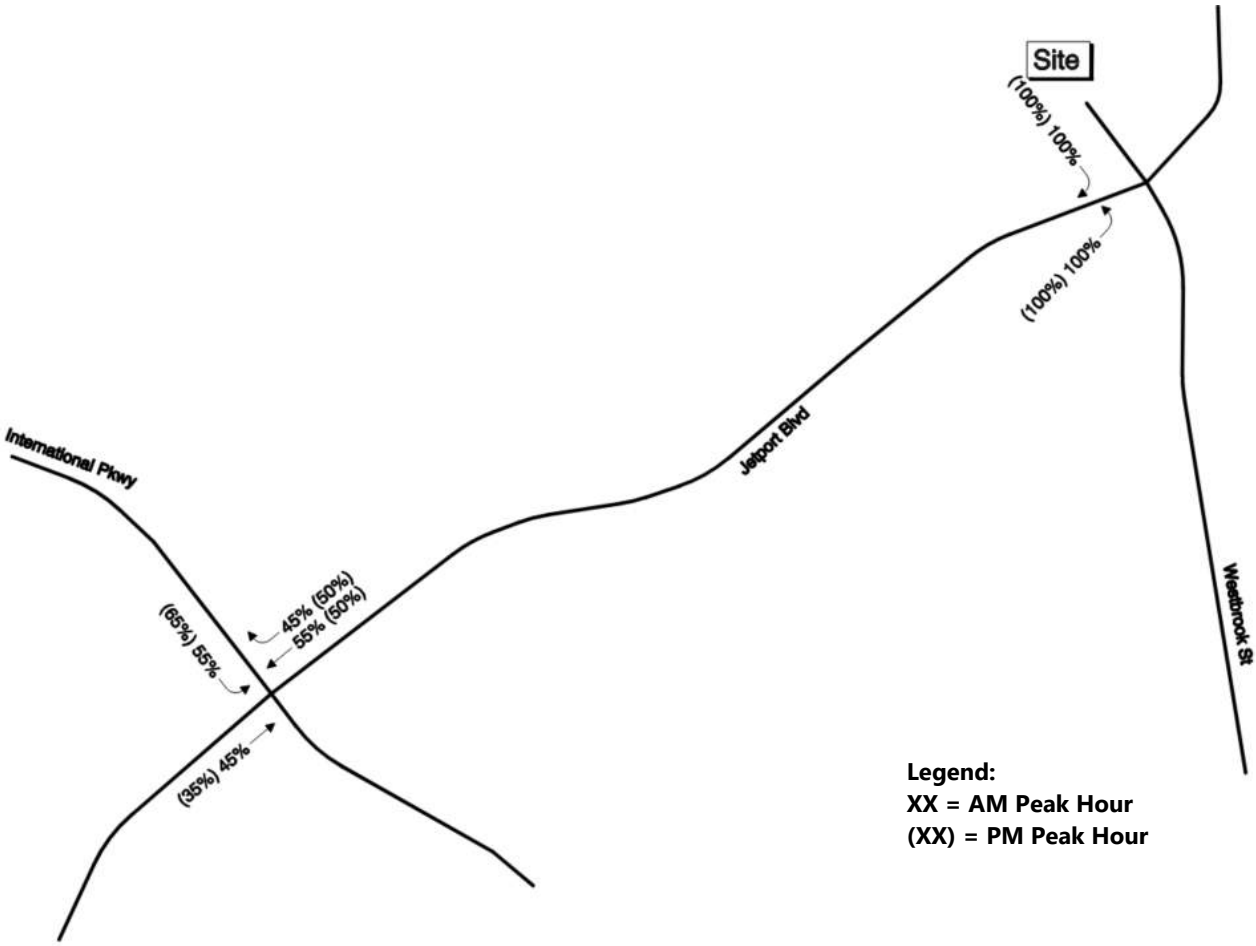
Based on the most conservative trip generation calculations, the proposed development will generate 69 trips during the AM peak hour, 72 trips during the PM peak hour and 89 trips during the Saturday peak hour. **Since the peak hour trip generation is anticipated to be less than the 100-trip threshold, a Traffic Movement Permit (TMP) from MaineDOT would not be expected to be required for this development.**

Trip Distribution and Assignment

A trip distribution pattern for the site was developed based on existing traffic patterns. The resulting trip distribution for the proposed project is presented in Figure 4 below:

Memorandum

Figure 4 Trip Distribution

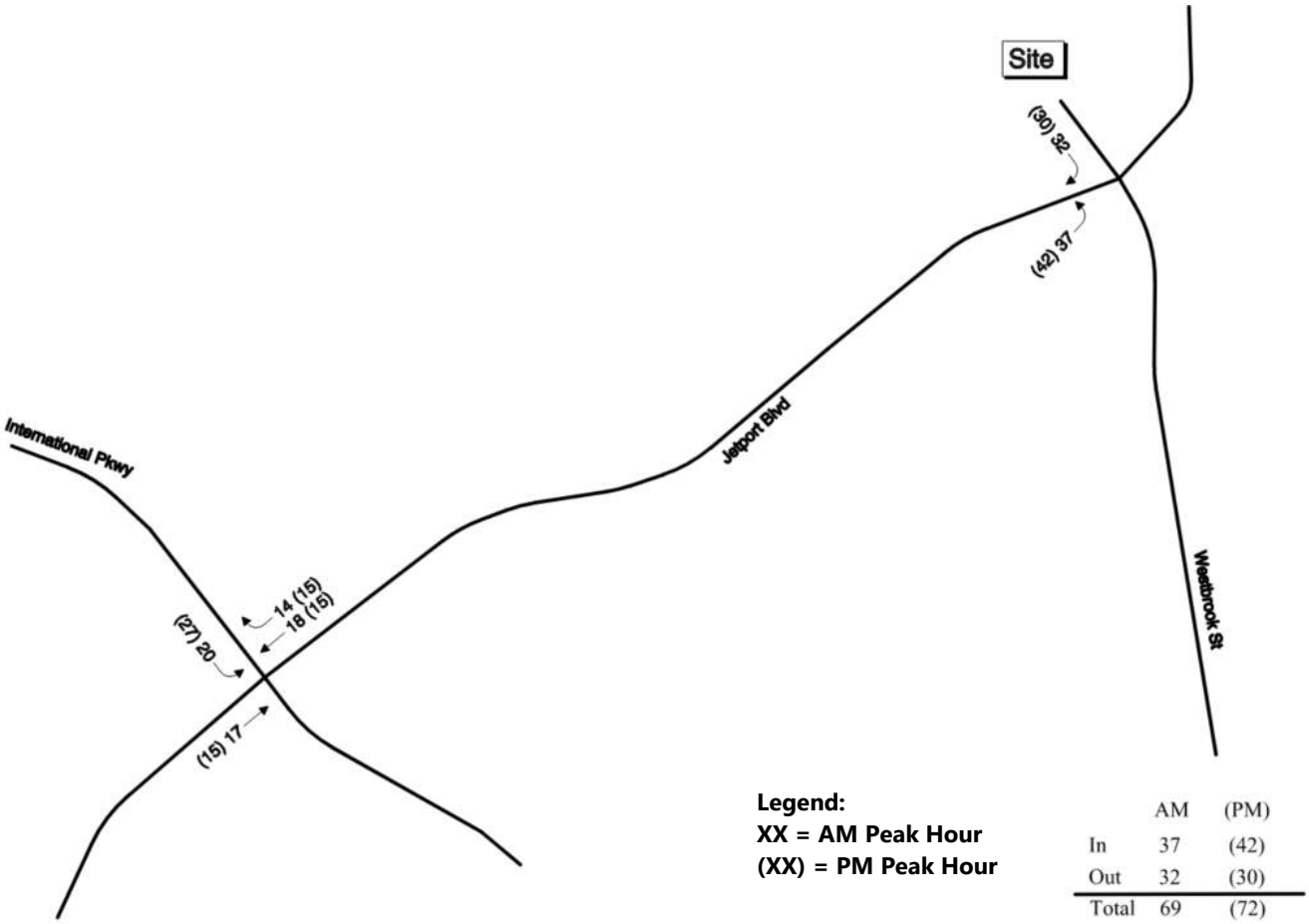


Using the distribution described above, vehicle trips were routed through the road network along the study area intersections. The resulting project generated trip assignment is shown in Figure 5.

Project generated vehicle trips for the morning and evening peak hours were added to the 2026 No-Build volumes to obtain the 2026 Build volumes as shown in Figure 6.

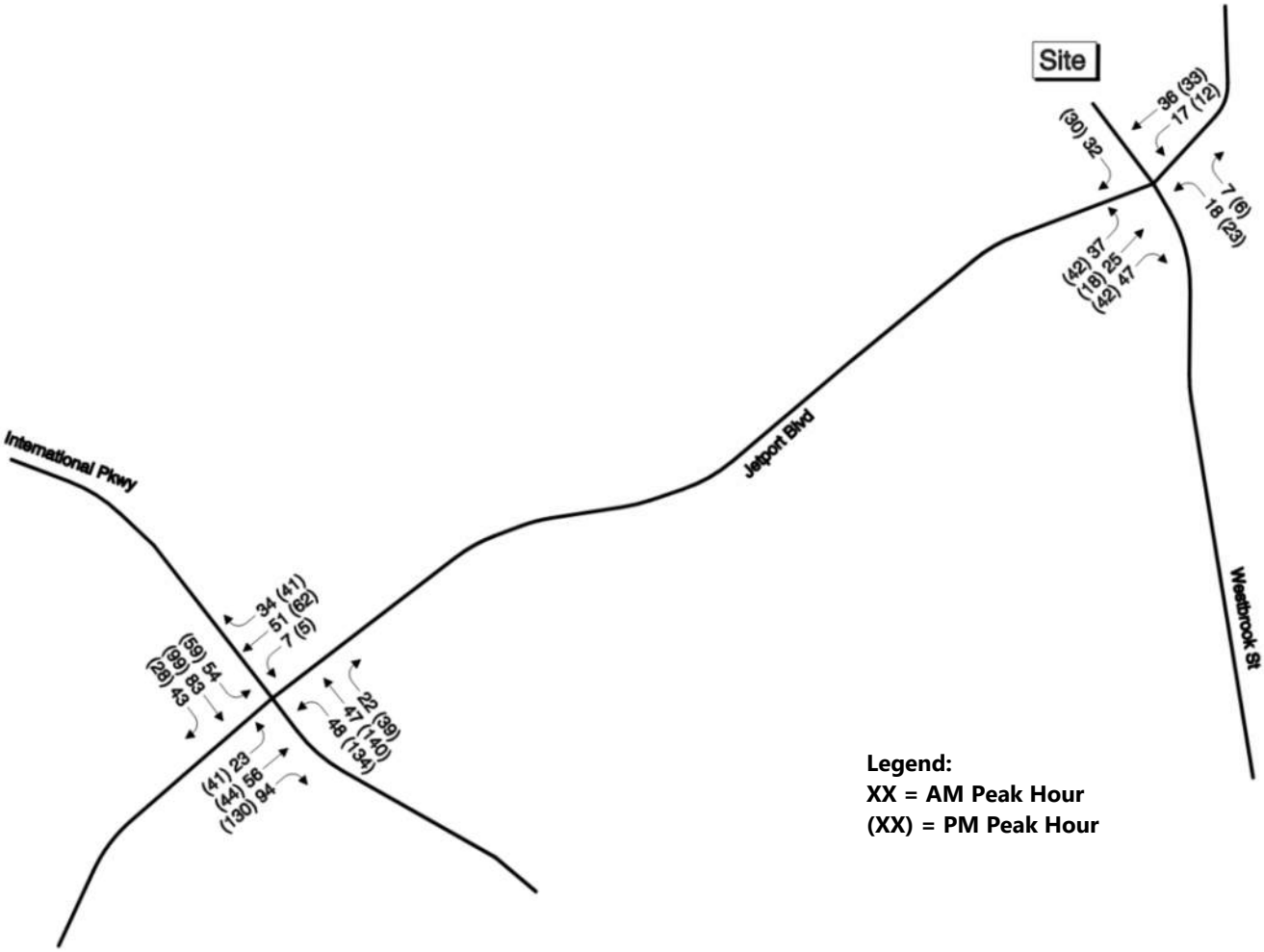
Memorandum

Figure 5 Trip Assignment



Memorandum

Figure 6 2026 Build Traffic Volumes



Parking Generation

Parking generation estimates for the Project are based on standard Institute of Transportation Engineers' (ITE) data. The ITE Parking Generation Manual categorizes the same land uses provided in the trip generation manual and provides weekday (Monday-Friday) and weekend parking generation estimates for each use. Parking generation estimates for the proposed hotel were projected using data published in the ITE Parking Generation Manual based on the metrics for Land Use Code 310 – Hotel.

Parking generation for hotels is based on the number of rooms. VHB estimated peak parking demand using the ITE Parking Generation Manual (5th Edition) using both the average rate and fitted curve equations. Under each method, the peak parking demand for the hotel is calculated as:

- Average Rate: 89 parking spaces
- Fitted Curve: 96 parking spaces

A total of 105 parking spaces are being provided on the site.

All-Way Stop Analysis

The International Way and Jetport Boulevard intersection was evaluated using the multi-way stop control methodology outlined in the *Manual on Uniform Traffic Control Devices* (MUTCD)[1] to determine if multi-way stop control was warranted at this location.

The MUTCD provides criteria that should be considered for installation of a multi-way stop sign, including the following:

- Criteria A indicates that all-way stop control may be installed at an intersection where an engineering study indicates that:
  - 1. For a four-leg intersection, there are five or more reported crashes in a 12-month period or six or more reported crashes in a 36-month period that were of a type susceptible to correction by the installation of all-way stop control.
  - 2. For a three-leg intersection, there are four or more reported crashes in a 12-month period or five or more reported crashes in a 36-month period that were of a type susceptible to correction by the installation of all-way stop control.
- Criteria B indicates that all-way stop control may be installed at an intersection where an engineering study indicates that sight distance on the minor-road approaches controlled by a STOP sign is not adequate for a vehicle to turn onto or cross the major (uncontrolled) road.
- Criteria C indicates an all-way stop control may be installed at locations where all-way stop control is an interim measure that can be installed to control traffic while arrangements are being made for the installation of a traffic control signal at the intersection or for the installation of yield control at a circular intersection.
- Criteria D provides minimum volume criteria based on the following:

[1] Manual on Uniform Traffic Control Devices, FHWA, 2023

- 1. The combined motor vehicle, bicycle, and pedestrian volume entering the intersection from the major-street approaches is at least 300 units per hour for each of any 8 hours of a typical day; and
- 2. The combined motor vehicle, bicycle, and pedestrian volume entering the intersection from the minor-street approaches is at least 200 units per hour for each of any of the same 8 hours.
- 3. If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants may be reduced to 70 percent of the values given in Items D.1 and D.2.

› Criteria E indicates all-way stop control may be installed at an intersection where an engineering study indicates that all-way stop control is needed due to other factors not addressed in the other all-way stop control warrants. Such other factors may include, but are not limited to, the following:

- 1. The need to control left-turn conflicts
- 2. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where all-way stop control would improve traffic operational characteristics of the intersection, or
- 3. Where pedestrian and/or bicyclist movements support the installation of all-way stop control.

Criteria D was the primary focus of this analysis as traffic signal warrants were not anticipated to be satisfied for Criteria C and crash thresholds are not met for Criteria A. Sight lines, as discussed in Criteria B, are discussed below,

The volume thresholds from Criteria D.1 and D.2 were met for all scenarios when the major street was considered International Way and the minor street was considered Jetport Boulevard. As such, the conditions for multi-way stop were satisfied as reflected in Table 5. Criteria D.3 does not apply as 85th percentile speeds do not meet the 40 mph criteria. Criteria E was checked and determined not applicable.

Table 5 Multi-Way Stop Criteria C Conditions

Scenario	Warrant Met	Condition C.1 Volume Any 8 Hour Avg > 300 vph Major Street	Condition C.2 Same 8 Hour Avg > 200 vph Major Street
Existing Conditions	Yes	Yes	Yes
No-Build	Yes	Yes	Yes
Build	Yes	Yes	Yes

Traffic Operations Analysis

Synchro/SimTraffic (Version 11) was utilized to determine the level of service (LOS) at the study area intersections. Level of service is the term that defines the delay conditions that occur on a given roadway or at an intersection when accommodating various traffic volume loads.

An existing conditions model of the study area was developed based on existing conditions volumes from 2024 and future conditions 2026. The Synchro/SimTraffic output includes capacity, delay, and 95th percentile queues. All model results reported in this evaluation are based on an average of five runs for each analysis scenario.

Table 4 below summarizes the operation analysis results at each study area intersection during the 2024 Existing, 2026 No-Build, and 2026 Build conditions without the implementation of an all way stop at both intersections.

Table 5 summarizes the same existing and no-build conditions and a 2026 Build condition with an all way stop at both intersections. As shown, all study area intersections are projected to operate with minimal delay under 2026 Build conditions (with and without an all way stop) with all approaches at LOS A. Vehicle queues are reasonable and are accommodated at all study area intersections.

Table 4 Intersection Analysis Summary Without AWS

1. Jetport Boulevard/ Westbrook Street

	2024 Existing Conditions						2026 No Build						2026 Build (No AWS)					
	AM			PM			AM			PM			AM			PM		
Movement	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]
Jetport EB LTR	1.2	A	--	1.0	A	--	0.9	A	--	0.8	A	--	1.5	A	9	1.7	A	10
Jetport WB LTR	0.6	A	14	0.6	A	11	0.6	A	11	0.5	A	15	0.6	A	11	0.6	A	9
Westbrook NB LTR	3.9	A	43	3.7	A	48	3.9	A	43	3.8	A	49	4.3	A	44	4.5	A	45
Site Driveway LTR	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.5	A	39	4.7	A	38

2. Jetport Boulevard/ International Parkway

	2024 Existing Conditions						2026 No Build						2026 Build (No AWS)					
	AM			PM			AM			PM			AM			PM		
Movement	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]
Jetport EB LTR	5.1	A	75	6.6	A	91	5.1	A	76	6.8	A	93	5.4	A	71	7.7	A	103
Jetport WB LTR	5.2	A	68	6.2	A	68	5.1	A	69	6.6	A	70	5.4	A	67	8.1	A	83
International NB LTR	1.1	A	28	1.6	A	51	1.0	A	27	1.5	A	46	1.0	A	24	1.6	A	52
International SB LTR	0.8	A	16	0.9	A	28	0.8	A	19	0.9	A	30	1.0	A	21	1.3	A	38

[1]Delay expressed in seconds per vehicle
[2]Level of Service - Unsignalized: (Delay Range: A: 0-10, B: 10-15, C: 15-25, D: 25-35, E: 35-50, F: >50)
[3]95th percentile queue length expressed in feet

Memorandum

Table 5 Intersection Analysis Summary With AWS

1. Jetport Boulevard/ Westbrook Street

	2024 Existing Conditions						2026 No Build						2026 Build (With AWS)					
	AM			PM			AM			PM			AM			PM		
Movement	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]
Jetport EB LTR	1.2	A	--	1.0	A	--	0.9	A	--	0.8	A	--	4.0	A	44	3.7	A	39
Jetport WB LTR	0.6	A	14	0.6	A	11	0.6	A	11	0.5	A	15	4.8	A	63	4.8	A	61
Westbrook NB LTR	3.9	A	43	3.7	A	48	3.9	A	43	3.8	A	49	3.8	A	42	3.8	A	45
Site Driveway LTR	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.6	A	39	4.6	A	38

2. Jetport Boulevard/ International Parkway

	2024 Existing Conditions						2026 No Build						2026 Build (With AWS)					
	AM			PM			AM			PM			AM			PM		
Movement	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]	Delay[1]	LOS[2]	Q95[3]
Jetport EB LTR	5.1	A	75	6.6	A	91	5.1	A	76	6.8	A	93	4.7	A	68	5.4	A	87
Jetport WB LTR	5.2	A	68	6.2	A	68	5.1	A	69	6.6	A	70	5.4	A	68	6.5	A	76
International NB LTR	1.1	A	28	1.6	A	51	1.0	A	27	1.5	A	46	4.8	A	52	6.6	A	84
International SB LTR	0.8	A	16	0.9	A	28	0.8	A	19	0.9	A	30	5.3	A	70	5.9	A	77

[1]Delay expressed in seconds per vehicle
[2]Level of Service - Unsignalized: (Delay Range: A: 0-10, B: 10-15, C: 15-25, D: 25-35, E: 35-50, F: >50)
[3]95th percentile queue length expressed in feet

Sight Distance

VHB followed the MaineDOT evaluation of sight distance. Sight distance is measured to and from the proposed driveway centerline at 10 feet back from the edge of the traveled way. The speed limit is posted as 30 mph on Jetport Boulevard. The minimum allowable sight distances can be seen in Table 6 below:

Table 6 MaineDOT Sight Distance Requirements

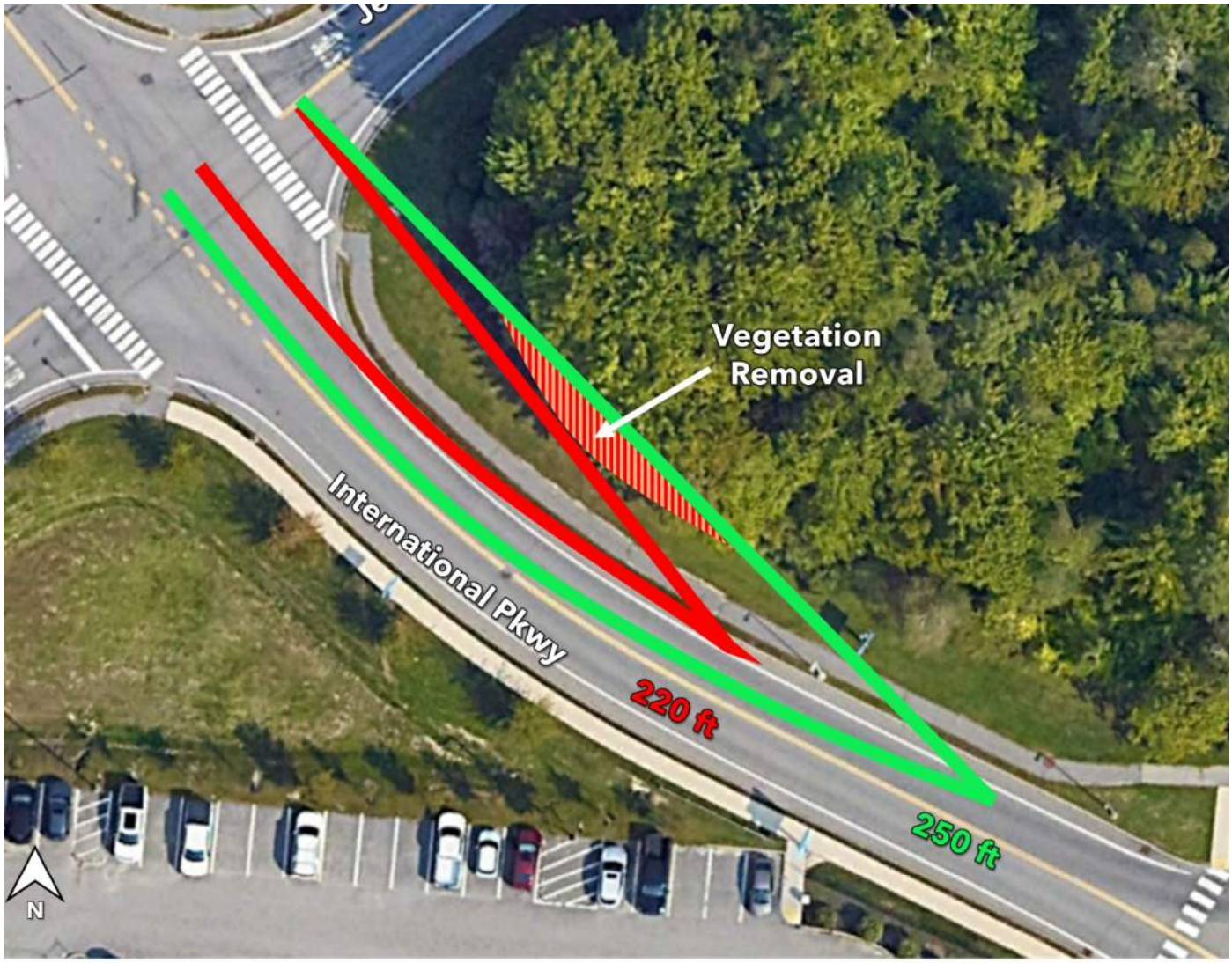
Posted Speed (mph)	Sight Distance (feet)
20	155
25	200
30	**250**
35	305
40	360
45	425
50	495
55	570
60	645

Based on a field visit, the sight distance at the proposed driveway exceeds the minimum 250 feet looking right before being blocked by vegetation. Looking left the sight distance meets a sight distance of 200 feet and then is blocked by vegetation. Site grading and vegetation removal will be conducted to ensure the minimum sight lines are met at this location.

The sight distance at the intersection of International Boulevard at Jetport Boulevard was also checked. As reported by METRO, the sight lines approaching Jetport from the south are limited by dense vegetation. The existing sight lines to the south from the westbound approach of Jetport Boulevard measures at 220 feet, which is just shy of an appropriate stopping sight distance at 30 miles per hour. An acceptable intersection sight distance of 250 feet can be achieved through vegetation removal as shown on the following page in Figure 7. Any vegetation removal in the location shown in Figure 7 is to be performed by others, as the applicant does not control the land in this area. All other sight lines are above the minimum threshold of 250 feet. In addition, a speed limit sign could be installed between the Jetport parking exit and Jetport Boulevard to bring awareness of the posted speed to those exiting the airport.

Memorandum

Figure 7 Vegetation Removal for Sight Lines



Conclusions

The following is a summary of the study's conclusions and findings:

- The development of a 120-room hotel will result in a trip generation of 69 trips during the AM peak hour, 72 trips during the PM peak hour, and 89 trips during the Saturday peak hour, and as such will not require a MaineDOT traffic access permit.
- The development will generate a peak parking demand of 96 spaces and provide 105 spaces.
- Conditions for a multi-way stop controlled analysis at International Way and Jetport Boulevard are currently satisfied. The concern raised by METRO regarding sight lines can also be addressed vegetation removal.
- Study area intersections are projected to operate at acceptable levels of service during all conditions and the project is anticipated to have minimal impacts to traffic operations.

ITE Trip Generation 11th Edition - Proposed

Total Site generated trips

Site Land Uses and Descriptions				AM PK HR ADJACENT STREET TRAFFIC										PM PK HR ADJACENT STREET TRAFFIC									
				directional dist.		average				regression		# trips			directional dist.		average				regression		# trips		
Code	Land Use	Size	Unit	% enter	% exit	# studies	Avg Rate	Std Dev.	Total by Avg	r^2	total by Eq'n	Method Chosen	Total Trips	Entering Exiting	% enter	% exit	# studies	Avg Rate	Std Dev.	Total by Avg	r^2	total by Eq'n	Method Chosen	Total Trips	Entering Exiting
310	Hotel	120	Dwelling Units	56%	44%	28	0.46	0.14	55	0.84	53	Average	55	31 24	51%	49%	31	0.59	0.22	71	0.78	61	Average	71	36 35

Based on ITE 11th Edition

	total	entering	exiting
AM Peak Hour Total Site Trips:	55	31	24

	total	entering	exiting
PM Peak Hour Total Site Trips:	71	36	35

Site Land Uses and Descriptions				AM PK HR GENERATOR TRAFFIC										PM PK HR GENERATOR TRAFFIC									
				directional dist.		average				regression		# trips			directional dist.		average				regression		# trips		
Code	Land Use	Size	Unit	% enter	% exit	# studies	Avg Rate	Std Dev.	Total by Avg	r^2	total by Eq'n	Method Chosen	Total Trips	Entering Exiting	% enter	% exit	# studies	Avg Rate	Std Dev.	Total by Avg	r^2	total by Eq'n	Method Chosen	Total Trips	Entering Exiting
310	Hotel	120	Dwelling Units	53%	47%	33	0.53	0.21	64	0.64	69	Regression	69	37 32	58%	42%	32	0.60	0.18	72	0.69	72	Average	72	42 30

Based on ITE 11th Edition

	total	entering	exiting
AM Peak Hour Total Site Trips:	69	37	32

	total	entering	exiting
PM Peak Hour Total Site Trips:	72	42	30

ITE Trip Generation 11th Edition - Proposed

Total Site generated trips

Site Land Uses and Descriptions				SATURDAY PK HR GENERATOR TRAFFIC											
				directional dist.		average				regression		# trips			
Code	Land Use	Size	Unit	% enter	% exit	# studies	Avg Rate	Std Dev.	Total by Avg	r^2	total by Eq'n	Method Chosen	Total Trips	Entering	Exiting
310	Hotel	120	Dwelling Units	56%	44%	10	0.72	0.20	86	0.80	89	Regression	89	50	39

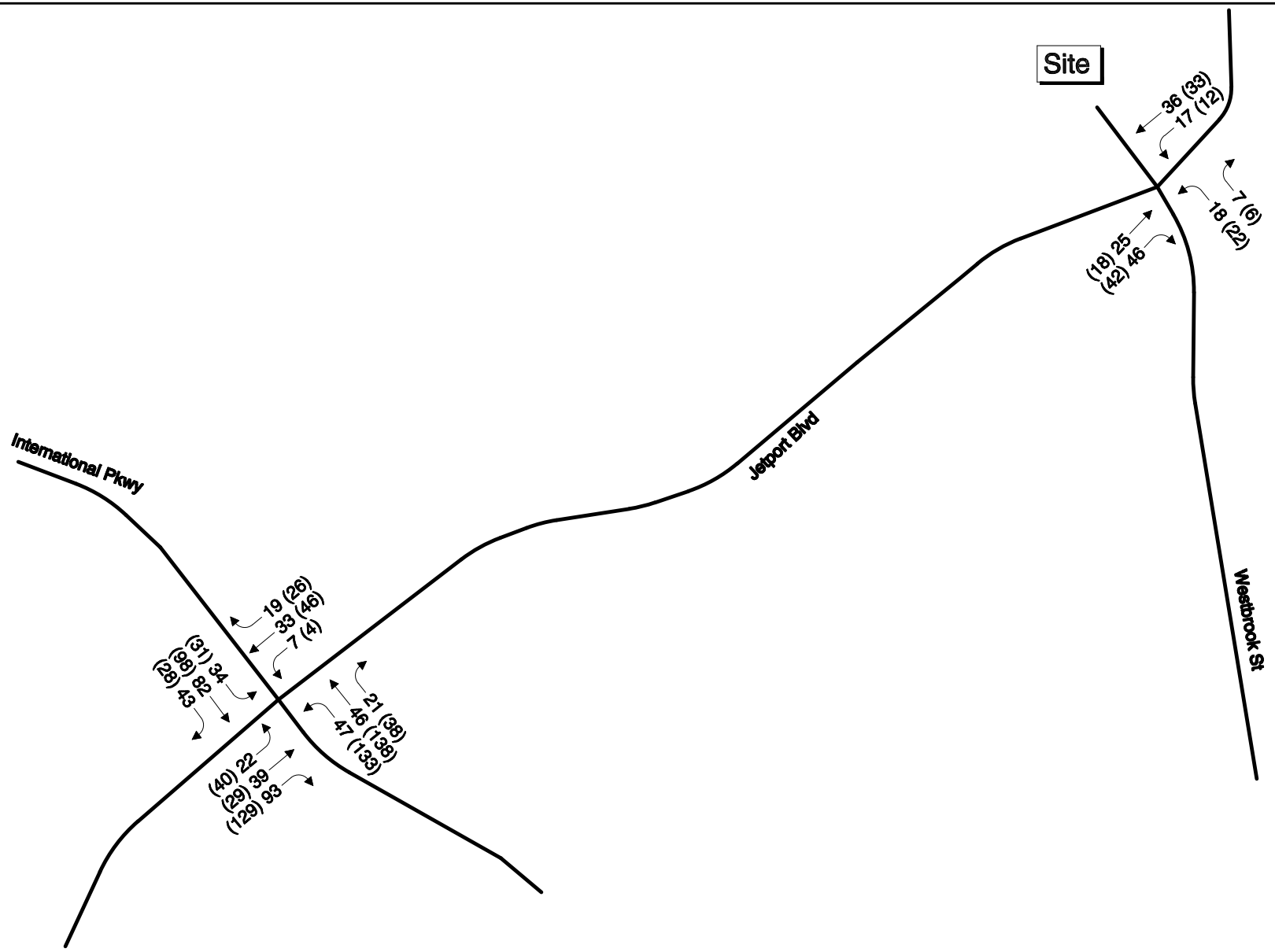
Based on ITE 11th Edition

	total	entering	exiting
Saturday Peak Hour Total Site Trips:	89	50	39

Site Land Uses and Descriptions				SATURDAY PK HR GENERATOR TRAFFIC											
				directional dist.		average				regression		# trips			
Code	Land Use	Size	Unit	% enter	% exit	# studies	Avg Rate	Std Dev.	Total by Avg	r^2	total by Eq'n	Method Chosen	Total Trips	Entering	Exiting
310	Hotel	120	Dwelling Units	56%	44%	10	0.72	0.20	86	0.80	89	Regression	89	50	39

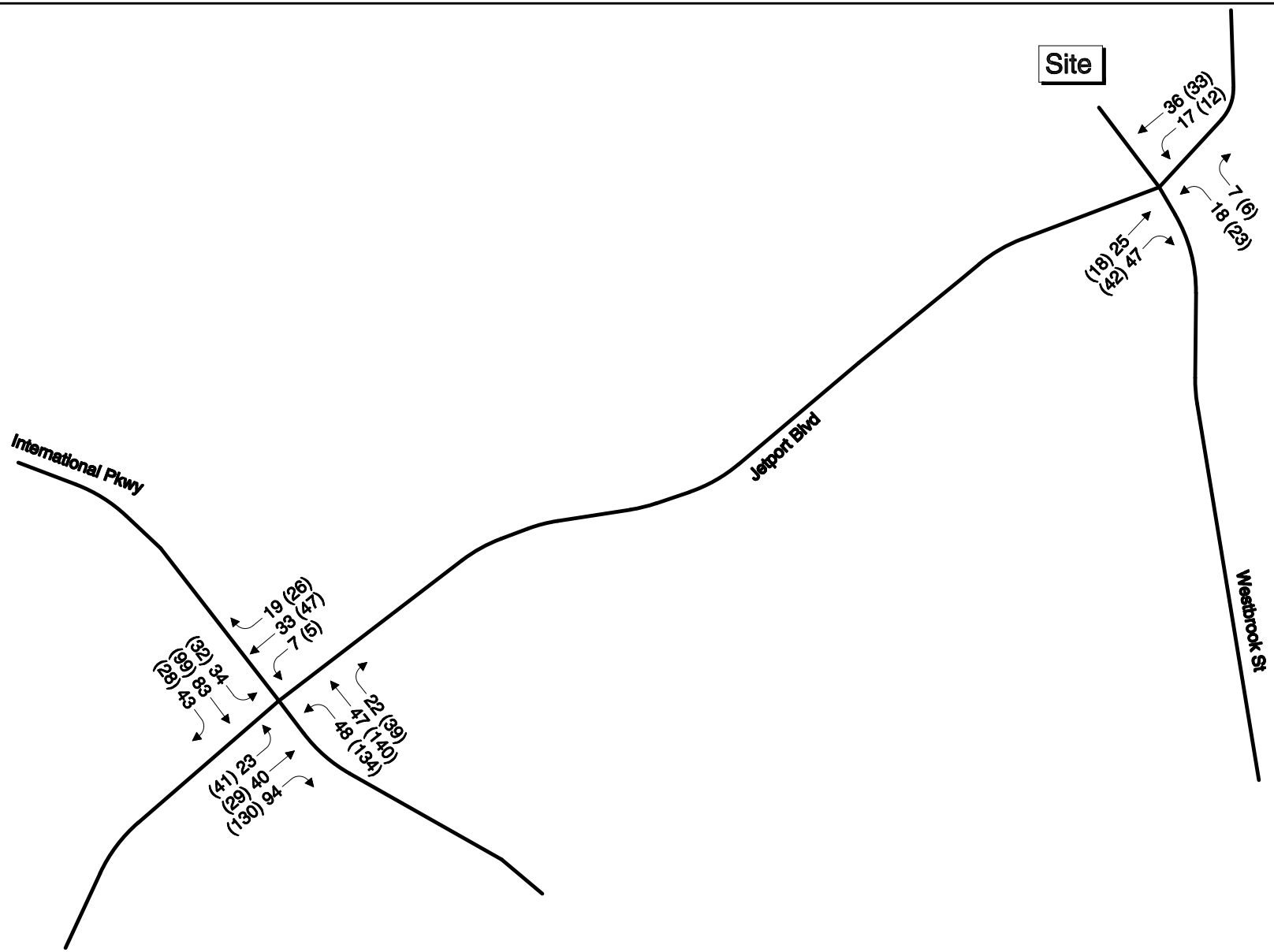
Based on ITE 11th Edition

	total	entering	exiting
Saturday Peak Hour Total Site Trips:	89	50	39



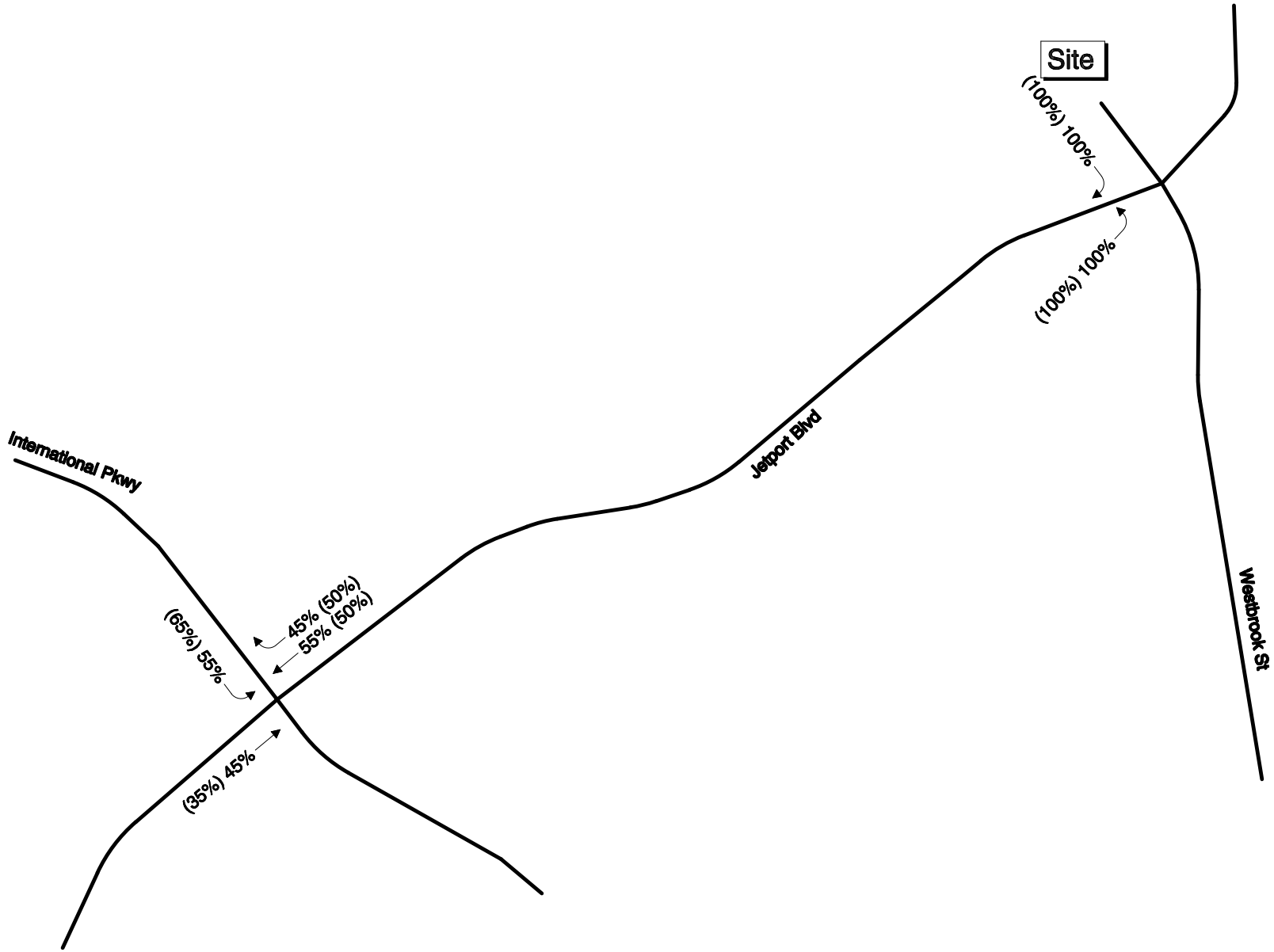
Not to Scale

Figure 1
2024 Existing Conditions
AM (PM)



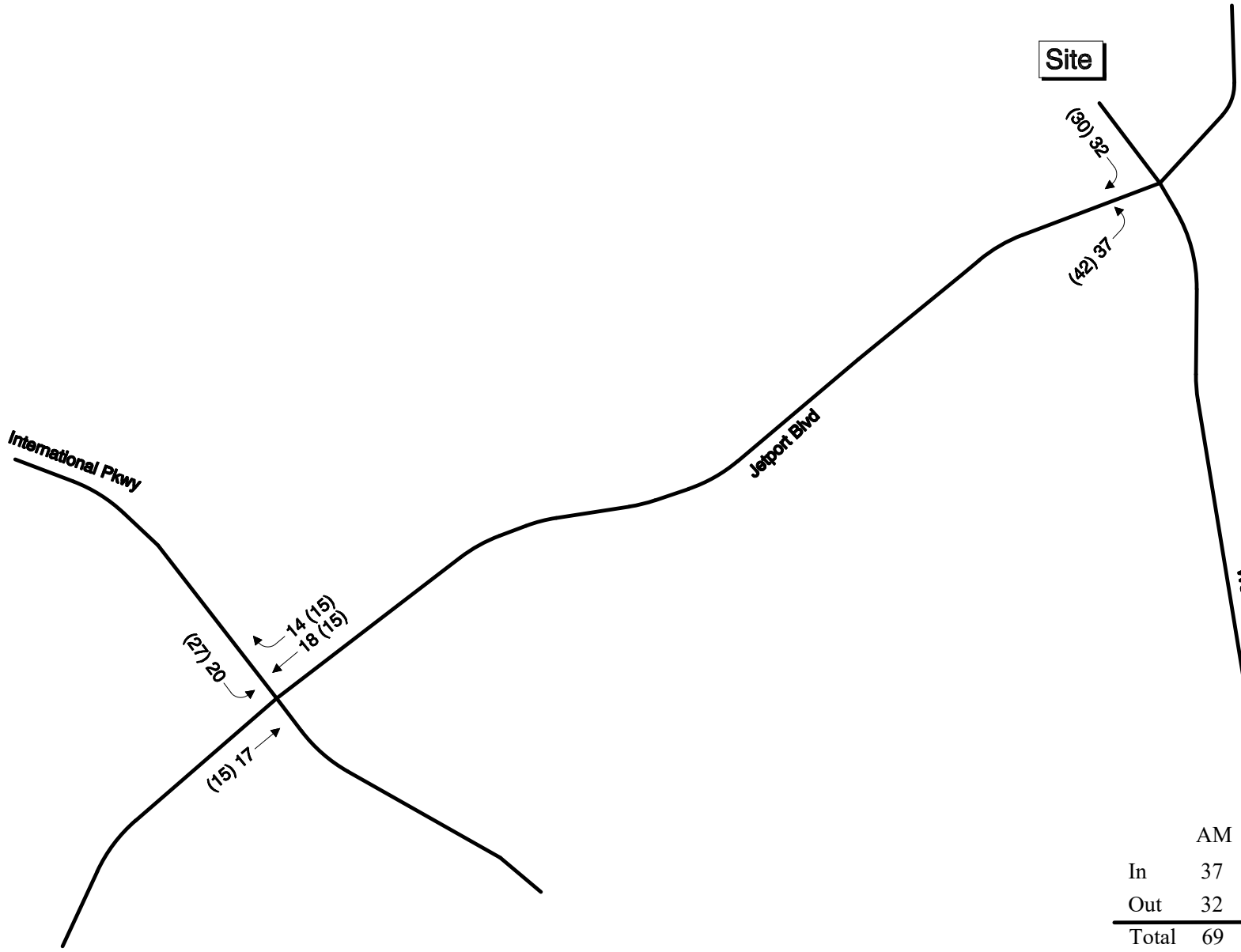
Not to Scale

Figure 2
2026 No Build
AM (PM)



Not to Scale

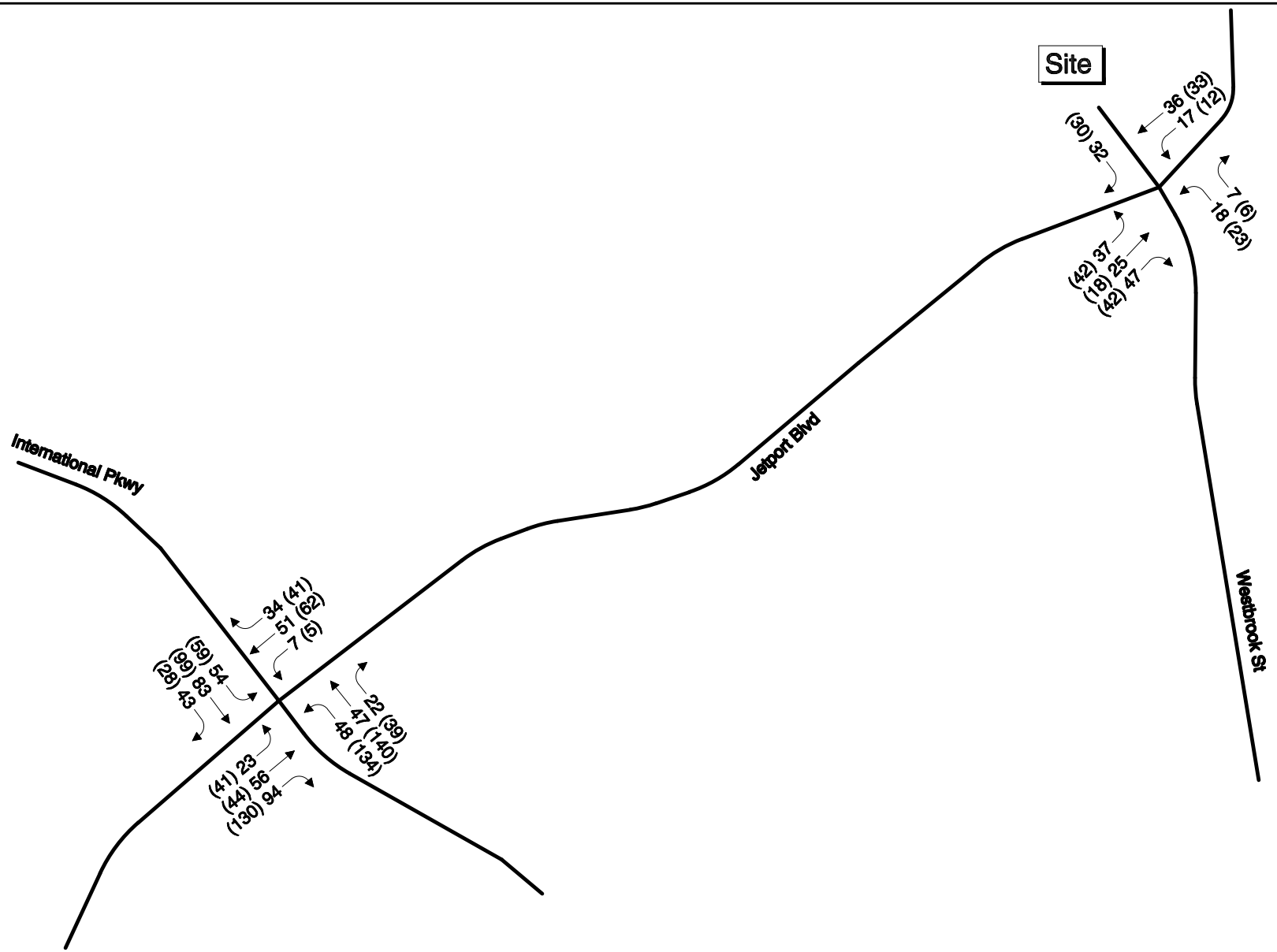
Figure 3
Trip Distribution
AM (PM)



	AM	(PM)
In	37	(42)
Out	32	(30)
Total	69	(72)

Not to Scale

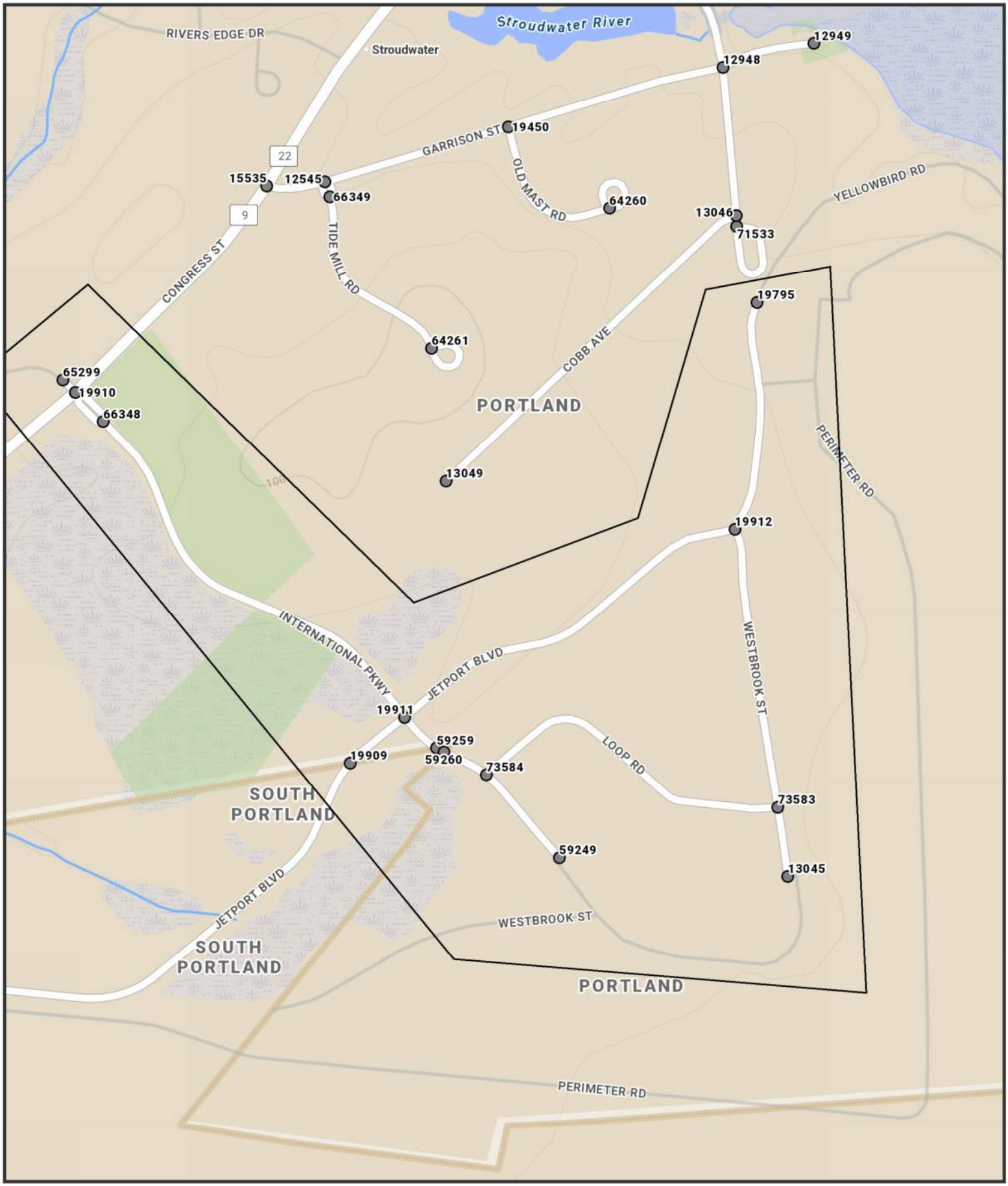
Figure 4
Trip Assignment
AM (PM)



Not to Scale

Figure 5
2026 Build
AM (PM)

PORTLAND JETPORT



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0.1 Miles

1 inch = 0.11 miles

Date: 1/3/2024
Time: 9:46:17 AM

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

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

REPORT DESCRIPTION

Portland
Jetport Area

REPORT PARAMETERS

Year 2020, Start Month 1 through Year 2022 End Month: 12

Route: **3201952**	Start Node: **19910**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **65299**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0566042**	Start Node: **19910**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **59249**	End Offset: **0**	☐ **Exclude Last Node**
Route: **3209501**	Start Node: **66348**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19910**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0566043**	Start Node: **19909**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **19911**	End Offset: **0**	☑ **Exclude Last Node**
Route: **3200062**	Start Node: **73583**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **73584**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0561240**	Start Node: **13045**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **19795**	End Offset: **0**	☐ **Exclude Last Node**
Route: **0566043**	Start Node: **19911**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **19912**	End Offset: **0**	☑ **Exclude Last Node**

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
19910	3201952 - 0	Int of CONGRESS ST INTERNATIONAL PKWY UNUM PARK	9	15	0	0	2	4	9	40.0	7.918	0.63	1.06	0.60
												Statewide Crash Rate:	0.65	
65299	3201952 - 0.01	End of UNUM PARK Z RD	2	0	0	0	0	0	0	0.0	0.763	0.00	0.49	0.00
												Statewide Crash Rate:	0.12	
66348	0566042 - 0.03	Non Int INTERNATIONAL PKWY	2	0	0	0	0	0	0	0.0	1.745	0.00	0.41	0.00
												Statewide Crash Rate:	0.12	
19911	0566042 - 0.32	Int of INTERNATIONAL PKWY JETPORT BLVD	2	4	0	0	0	3	1	75.0	3.831	0.35	0.34	1.02
												Statewide Crash Rate:	0.12	
59259	0566042 - 0.35	TL Portland South Portland	2	0	0	0	0	0	0	0.0	3.377	0.00	0.35	0.00
												Statewide Crash Rate:	0.12	
59260	0566042 - 0.36	TL Portland South Portland	2	0	0	0	0	0	0	0.0	3.063	0.00	0.36	0.00
												Statewide Crash Rate:	0.12	
73584	0566042 - 0.39	Int of AIRPORT EXIT RD INTERNATIONAL PKWY	2	1	0	0	0	0	1	0.0	3.395	0.10	0.35	0.00
												Statewide Crash Rate:	0.12	
59249	0566042 - 0.46	End of INTERNATIONAL PKWY	2	0	0	0	0	0	0	0.0	1.374	0.00	0.44	0.00
												Statewide Crash Rate:	0.12	
19909	0566043 - 0	TL Portland South Portland	2	0	0	0	0	0	0	0.0	2.072	0.00	0.40	0.00
												Statewide Crash Rate:	0.12	
13045	0561240 - 0	End of WESTBROOK ST	2	1	0	0	0	0	1	0.0	0.117	2.85	0.20	14.13
												Statewide Crash Rate:	0.12	
73583	0561240 - 0.05	Int of AIRPORT EXIT RD WESTBROOK ST	2	0	0	0	0	0	0	0.0	0.881	0.00	0.48	0.00
												Statewide Crash Rate:	0.12	
19912	0561240 - 0.23	Int of JETPORT BLVD WESTBROOK ST	2	0	0	0	0	0	0	0.0	0.489	0.00	0.52	0.00
												Statewide Crash Rate:	0.12	
19795	0561240 - 0.38	End of WESTBROOK ST	2	0	0	0	0	0	0	0.0	0.100	0.00	0.09	0.00
												Statewide Crash Rate:	0.12	
Study Years:	3.00	**NODE TOTALS:**		21	0	0	2	7	12	42.9	29.125	0.24	0.40	0.60

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
19910	65299	5649123	0 - 0.01	3201952 - 0	0.01	2	0	0	0	0	0	0	0.0	0.00015	0.00	1436.02	0.00
Int of CONGRESS ST	INTERNATIONAL PKWY UNUM PARK Z RD			RD INV 3201952											Statewide Crash Rate: 332.58		
19910	66348	5649126	0 - 0.03	0566042 - 0	0.03	2	0	0	0	0	0	0	0.0	0.00026	0.00	664.13	0.00
Int of CONGRESS ST	INTERNATIONAL PKWY UNUM PARK Z RD			RD INV 05 66042											Statewide Crash Rate: 155.30		
66348	19911	3121633	0 - 0.29	0566042 - 0.03	0.29	2	1	0	0	0	1	0	100.0	0.00506	65.88	382.92	0.00
Non Int INTERNATIONAL PKWY				RD INV 05 66042											Statewide Crash Rate: 155.30		
19911	59259	1951926	0 - 0.03	0566042 - 0.32	0.03	2	3	0	0	0	0	3	0.0	0.00101	987.08	1020.20	0.00
Int of INTERNATIONAL PKWY	JETPORT BLVD			RD INV 05 66042											Statewide Crash Rate: 332.58		
59259	59260	1951930	0 - 0.01	0566042 - 0.35	0.01	2	0	0	0	0	0	0	0.0	0.00034	0.00	1314.98	0.00
TL Portland	South Portland			RD INV 05 66042											Statewide Crash Rate: 332.58		
59260	73584	4631498	0 - 0.03	0566042 - 0.36	0.03	2	0	0	0	0	0	0	0.0	0.00082	0.00	1075.00	0.00
TL Portland	South Portland			RD INV 05 66042											Statewide Crash Rate: 332.58		
73584	59249	4631499	0 - 0.07	0566042 - 0.39	0.07	2	0	0	0	0	0	0	0.0	0.00192	0.00	864.31	0.00
Int of AIRPORT EXIT RD	INTERNATIONAL PKWY			RD INV 05 66042											Statewide Crash Rate: 332.58		
66348	19910	5649127	0 - 0.03	3209501 - 0	0.03	2	0	0	0	0	0	0	0.0	0.00026	0.00	664.13	0.00
Non Int INTERNATIONAL PKWY				RD INV 3209501											Statewide Crash Rate: 155.30		
19909	19911	3119287	0 - 0.05	0566043 - 0	0.05	2	0	0	0	0	0	0	0.0	0.00100	0.00	574.88	0.00
TL Portland	South Portland			RD INV 05 66043											Statewide Crash Rate: 155.30		
73583	73584	4631502	0 - 0.22	3200062 - 0	0.22	2	3	0	1	0	0	2	33.3	0.00285	351.29	782.39	0.00
Int of AIRPORT EXIT RD	WESTBROOK ST			RD INV 3200062											Statewide Crash Rate: 332.58		
13045	73583	4631496	0 - 0.05	0561240 - 0	0.05	2	1	0	0	0	0	1	0.0	0.00012	2849.43	1415.55	2.01
End of WESTBROOK ST				RD INV 05 61240											Statewide Crash Rate: 332.58		
73583	19912	4631497	0 - 0.18	0561240 - 0.05	0.18	2	0	0	0	0	0	0	0.0	0.00042	0.00	1258.49	0.00
Int of AIRPORT EXIT RD	WESTBROOK ST			RD INV 05 61240											Statewide Crash Rate: 332.58		
19795	19912	4631503	0 - 0.15	0561240 - 0.23	0.15	2	0	0	0	0	0	0	0.0	0.00030	0.00	1342.10	0.00
End of WESTBROOK ST				RD INV 05 61240											Statewide Crash Rate: 332.58		
19911	19912	195462	0 - 0.25	0566043 - 0.05	0.25	2	0	0	0	0	0	0	0.0	0.00136	0.00	946.06	0.00
Int of INTERNATIONAL PKWY	JETPORT BLVD			RD INV 05 66043											Statewide Crash Rate: 332.58		
Study Years: 3.00				**Section Totals:**	1.40		8	0	1	0	1	6	25.0	0.01588	167.96	438.58	0.38
				Grand Totals:	1.40		29	0	1	2	8	18	37.9	0.01588	608.87	556.82	1.09

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
19910	65299	5649123	0 - 0.01	3201952 - 0	0	0	0	0	0	0				
19910	66348	5649126	0 - 0.03	0566042 - 0	0	0	0	0	0	0				
66348	19911	3121633	0 - 0.29	0566042 - 0.03	1	0	0	0	1	0	2021-14569	06/10/2021	0.26	C
19911	59259	1951926	0 - 0.03	0566042 - 0.32	3	0	0	0	0	3	2022-20693	07/23/2022	0.33	PD
											2021-12492	05/25/2021	0.33	PD
											2020-25411	10/22/2020	0.34	PD
59259	59260	1951930	0 - 0.01	0566042 - 0.35	0	0	0	0	0	0				
59260	73584	4631498	0 - 0.03	0566042 - 0.36	0	0	0	0	0	0				
73584	59249	4631499	0 - 0.07	0566042 - 0.39	0	0	0	0	0	0				
66348	19910	5649127	0 - 0.03	3209501 - 0	0	0	0	0	0	0				
19909	19911	3119287	0 - 0.05	0566043 - 0	0	0	0	0	0	0				
73583	73584	4631502	0 - 0.22	3200062 - 0	3	0	1	0	0	2	2021-23511	09/03/2021	0.06	A
											2022-28423	10/06/2022	0.06	PD
											2022-3483	01/07/2022	0.12	PD
13045	73583	4631496	0 - 0.05	0561240 - 0	1	0	0	0	0	1	2021-27993	10/15/2021	0.03	PD
73583	19912	4631497	0 - 0.18	0561240 - 0.05	0	0	0	0	0	0				
19795	19912	4631503	0 - 0.15	0561240 - 0.23	0	0	0	0	0	0				
19911	19912	195462	0 - 0.25	0566043 - 0.05	0	0	0	0	0	0				
				Totals:	8	0	1	0	1	6				

Crash Summary II - Characteristics

Crashes by Day and Hour

	AM												PM												
	Hour of Day																								
Day Of Week	**12**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**Un**	**Tot**
SUNDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	3
MONDAY	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
TUESDAY	0	0	0	0	0	0	0	0	2	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	4
WEDNESDAY	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2
THURSDAY	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0	1	0	0	0	0	0	0	6
FRIDAY	0	0	0	0	0	0	0	1	1	1	0	0	1	0	2	0	1	0	1	0	0	0	0	0	0	8
SATURDAY	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	4
Totals	0	1	1	0	0	0	0	1	3	1	1	2	3	3	4	1	3	1	2	1	0	0	0	1	0	**29**

Vehicle Counts by Type

Unit Type	Total
1-Passenger Car	26
2-(Sport) Utility Vehicle	17
3-Passenger Van	3
4-Cargo Van (10K lbs or Less)	0
5-Pickup	12
6-Motor Home	0
7-School Bus	0
8-Transit Bus	2
9-Motor Coach	0
10-Other Bus	0
11-Motorcycle	0
12-Moped	0
13-Low Speed Vehicle	0
14-Autocycle	0
15-Experimental	0
16-Other Light Trucks (10,000 lbs or Less)	0
17-Medium/Heavy Trucks (More than 10,000 lbs)	0
18-ATV - (4 wheel)	0
20-ATV - (2 wheel)	0
21-Snowmobile	0
22-Pedestrian	0

Unit Type	Total
23-Bicyclist	0
24-Witness	2
25-Other	1
26-Construction	0
27-Farm Vehicle	0
28-Horse and Buggy	0
Total	**63**

Crash Summary II - Characteristics

Crashes by Driver Action at Time of Crash

Driver Action at Time of Crash	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
No Contributing Action	10	21	0	0	0	0	31
Ran Off Roadway	3	0	0	0	0	0	3
Failed to Yield Right-of-Way	4	0	0	0	0	0	4
Ran Red Light	0	0	0	0	0	0	0
Ran Stop Sign	0	0	0	0	0	0	0
Disregarded Other Traffic Sign	0	0	0	0	0	0	0
Disregarded Other Road Markings	0	0	0	0	0	0	0
Exceeded Posted Speed Limit	0	0	0	0	0	0	0
Drove Too Fast For Conditions	1	0	0	0	0	0	1
Improper Turn	0	1	0	0	0	0	1
Improper Backing	0	1	0	0	0	0	1
Improper Passing	0	0	0	0	0	0	0
Wrong Way	0	0	0	0	0	0	0
Followed Too Closely	7	0	0	0	0	0	7
Failed to Keep in Proper Lane	1	0	0	0	0	0	1
Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner	0	0	0	0	0	0	0
Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway	0	0	0	0	0	0	0
Over-Correcting/Over-Steering	0	0	0	0	0	0	0
Other Contributing Action	3	1	0	0	0	0	4
Unknown	0	0	0	0	0	0	0
Total	**29**	**24**	**0**	**0**	**0**	**0**	**53**

Crashes by Apparent Physical Condition And Driver

Apparent Physical Condition	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
Apparently Normal	26	24	0	0	0	0	50
Physically Impaired	0	0	0	0	0	0	0
Emotional(Depressed, Angry, Disturbed, etc.)	0	0	0	0	0	0	0
Ill (Sick)	1	0	0	0	0	0	1
Asleep or Fatigued	0	0	0	0	0	0	0
Under the Influence of Medications/Drugs/Alcohol	1	0	0	0	0	0	1
Other	1	0	0	0	0	0	1
Total	**29**	**24**	**0**	**0**	**0**	**0**	**53**

Driver Age by Unit Type

Age	Driver	Bicycle	SnowMobile	Pedestrian	ATV	Total
09-Under	0	0	0	0	0	0
10-14	0	0	0	0	0	0
15-19	1	0	0	0	0	1
20-24	2	0	0	0	0	2
25-29	4	0	0	0	0	4
30-39	17	0	0	0	0	17
40-49	16	0	0	0	0	16
50-59	7	0	0	0	0	7
60-69	10	0	0	0	0	10
70-79	2	0	0	0	0	2
80-Over	0	0	0	0	0	0
Unknown	2	0	0	0	0	2
Total	**61**	**0**	**0**	**0**	**0**	**61**

Crash Summary II - Characteristics

Most Harmful Event

Most Harmful Event	Total	Most Harmful Event	Total
1-Overturn / Rollover	0	38-Other Fixed Object (wall, building, tunnel, etc.)	0
2-Fire / Explosion	0	39-Unknown	9
3-Immersion	0	40-Gate or Cable	0
4-Jackknife	0	41-Pressure Ridge	0
5-Cargo / Equipment Loss Or Shift	0	**Total**	**60**
6-Fell / Jumped from Motor Vehicle	0		
7-Thrown or Falling Object	0		
8-Other Non-Collision	0		
9-Pedestrian	0		
10-Pedalcycle	0		
11-Railway Vehicle - Train, Engine	0		
12-Animal	0		
13-Motor Vehicle in Transport	41		
14-Parked Motor Vehicle	8		
15-Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle	0		
16-Work Zone / Maintenance Equipment	0		
17-Other Non-Fixed Object	0		
18-Impact Attenuator / Crash Cushion	0		
19-Bridge Overhead Structure	0		
20-Bridge Pier or Support	0		
21-Bridge Rail	0		
22-Cable Barrier	0		
23-Culvert	0		
24-Curb	0		
25-Ditch	0		
26-Embankment	0		
27-Guardrail Face	0		
28-Guardrail End	0		
29-Concrete Traffic Barrier	1		
30-Other Traffic Barrier	0		
31-Tree (Standing)	0		
32-Utility Pole / Light Support	1		
33-Traffic Sign Support	0		
34-Traffic Signal Support	0		
35-Fence	0		
36-Mailbox	0		
37-Other Post, Pole, or Support	0		

Injury Data

Severity Code	Injury Crashes	Number Of Injuries
K	0	0
A	1	2
B	2	3
C	8	11
PD	18	0
Total	**29**	**16**

Road Character

Road Grade	Total
1-Level	27
2-On Grade	2
3-Top of Hill	0
4-Bottom of Hill	0
5-Other	0
Total	**29**

Traffic Control Devices

Traffic Control Device	Total
1-Traffic Signals (Stop & Go)	13
2-Traffic Signals (Flashing)	0
3-Advisory/Warning Sign	0
4-Stop Signs - All Approaches	0
5-Stop Signs - Other	6
6-Yield Sign	0
7-Curve Warning Sign	1
8-Officer, Flagman, School Patrol	0
9-School Bus Stop Arm	0
10-School Zone Sign	0
11-R.R. Crossing Device	0
12-No Passing Zone	1
13-None	7
14-Other	1
Total	**29**

Light

Light Condition	Total
1-Daylight	23
2-Dawn	0
3-Dusk	1
4-Dark - Lighted	5
5-Dark - Not Lighted	0
6-Dark - Unknown Lighting	0
7-Unknown	0
Total	**29**

Crash Summary II - Characteristics

Crashes by Year and Month

Month	2020	2021	2022	Total
JANUARY	0	0	1	1
FEBRUARY	1	0	2	3
MARCH	0	4	0	4
APRIL	0	1	0	1
MAY	0	2	2	4
JUNE	0	2	1	3
JULY	0	0	1	1
AUGUST	1	0	0	1
SEPTEMBER	0	3	0	3
OCTOBER	1	1	2	4
NOVEMBER	0	1	1	2
DECEMBER	1	0	1	2
Total	**4**	**14**	**11**	**29**

Report is limited to the last 10 years of data.

Crash Summary II - Characteristics

Crashes by Crash Type and Type of Location

Crash Type	Straight Road	Curved Road	Three Leg Intersection	Four Leg Intersection	Five or More Leg Intersection	Driveways	Bridges	Interchanges	Other	Parking Lot	Private Way	Cross Over	Railroad Crossing	Traffic Circle-Roundabout	Total
Object in Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rear End - Sideswipe	0	2	0	14	0	0	0	0	0	0	1	0	0	0	17
Head-on - Sideswipe	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2
Intersection Movement	0	0	1	4	0	1	0	0	0	0	0	0	0	0	6
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Train	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Went Off Road	1	0	0	1	0	1	0	0	0	1	0	0	0	0	4
All Other Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jackknife	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rollover	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Submersion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thrown or Falling Object	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moose	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**2**	**3**	**1**	**19**	**0**	**2**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**29**

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Blowing Sand, Soil, Dirt												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Blowing Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Clear												
Dark - Lighted	2	0	0	0	0	0	0	0	0	0	0	2
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	16	2	0	0	0	0	0	0	0	0	0	18
Dusk	1	0	0	0	0	0	0	0	0	0	0	1
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Cloudy												
Dark - Lighted	0	0	0	0	0	0	0	1	0	0	0	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	1	0	0	0	0	0	0	0	0	0	0	1
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Fog, Smog, Smoke												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Other												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Rain												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	1	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	2	2
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Severe Crosswinds												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Sleet, Hail (Freezing Rain or Drizzle)												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Snow												
Dark - Lighted	0	0	0	0	0	0	0	1	0	0	0	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	2	0	0	0	2
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**20**	**2**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**3**	**29**

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	515	526	540	521	511	525
Vehs Exited	510	525	545	516	511	521
Starting Vehs	5	4	8	3	6	2
Ending Vehs	10	5	3	8	6	4
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0
Travel Distance (mi)	131	130	131	125	128	129
Travel Time (hr)	5.9	5.8	5.8	5.6	5.8	5.8
Total Delay (hr)	0.6	0.5	0.5	0.5	0.6	0.5
Total Stops	261	246	258	241	269	254
Fuel Used (gal)	5.1	5.1	5.2	5.0	5.1	5.1

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	515	526	540	521	511	525
Vehs Exited	510	525	545	516	511	521
Starting Vehs	5	4	8	3	6	2
Ending Vehs	10	5	3	8	6	4
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0
Travel Distance (mi)	131	130	131	125	128	129
Travel Time (hr)	5.9	5.8	5.8	5.6	5.8	5.8
Total Delay (hr)	0.6	0.5	0.5	0.5	0.6	0.5
Total Stops	261	246	258	241	269	254
Fuel Used (gal)	5.1	5.1	5.2	5.0	5.1	5.1

1: Westbrook St & Jetport Blvd/Westbrook Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.0
Total Del/Veh (s)	1.2	0.6	3.9	1.4
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

2: International Pkwy & Jetport Blvd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.0	0.2	0.2	0.2
Total Del/Veh (s)	5.1	5.2	1.1	0.8	2.8
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.2
Total Del/Veh (s)	3.5
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Westbrook St & Jetport Blvd/Westbrook Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	24	47
Average Queue (ft)	2	18
95th Queue (ft)	14	43
Link Distance (ft)	608	639
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: International Pkwy & Jetport Blvd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	94	87	43	38
Average Queue (ft)	45	35	7	2
95th Queue (ft)	75	68	28	16
Link Distance (ft)	456	1250	318	558
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 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	739	708	752	728	718	728
Vehs Exited	742	707	753	732	717	729
Starting Vehs	9	7	7	12	6	8
Ending Vehs	6	8	6	8	7	5
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0
Travel Distance (mi)	167	157	161	162	160	161
Travel Time (hr)	7.6	7.1	7.4	7.4	7.3	7.4
Total Delay (hr)	0.8	0.8	0.9	0.9	0.9	0.8
Total Stops	323	302	328	323	323	322
Fuel Used (gal)	6.8	6.4	6.5	6.7	6.5	6.6

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	739	708	752	728	718	728
Vehs Exited	742	707	753	732	717	729
Starting Vehs	9	7	7	12	6	8
Ending Vehs	6	8	6	8	7	5
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0
Travel Distance (mi)	167	157	161	162	160	161
Travel Time (hr)	7.6	7.1	7.4	7.4	7.3	7.4
Total Delay (hr)	0.8	0.8	0.9	0.9	0.9	0.8
Total Stops	323	302	328	323	323	322
Fuel Used (gal)	6.8	6.4	6.5	6.7	6.5	6.6

1: Westbrook St & Jetport Blvd/Westbrook Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.1
Total Del/Veh (s)	1.0	0.6	3.7	1.3
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

2: International Pkwy & Jetport Blvd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.0	0.3	0.2	0.2
Total Del/Veh (s)	6.6	6.2	1.6	0.9	3.2
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.2
Total Del/Veh (s)	3.9
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Westbrook St & Jetport Blvd/Westbrook Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	31	60
Average Queue (ft)	1	21
95th Queue (ft)	11	48
Link Distance (ft)	608	639
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: International Pkwy & Jetport Blvd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	118	85	85	43
Average Queue (ft)	53	37	16	6
95th Queue (ft)	91	68	51	28
Link Distance (ft)	456	1250	318	558
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 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	529	534	539	532	508	529
Vehs Exited	525	534	543	528	508	527
Starting Vehs	5	4	7	5	6	3
Ending Vehs	9	4	3	9	6	6
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0
Travel Distance (mi)	135	132	129	127	127	130
Travel Time (hr)	6.2	6.0	5.9	5.8	5.9	6.0
Total Delay (hr)	0.6	0.5	0.5	0.5	0.5	0.5
Total Stops	265	250	254	248	273	257
Fuel Used (gal)	5.3	5.2	5.1	5.0	5.0	5.1

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	529	534	539	532	508	529
Vehs Exited	525	534	543	528	508	527
Starting Vehs	5	4	7	5	6	3
Ending Vehs	9	4	3	9	6	6
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0
Travel Distance (mi)	135	132	129	127	127	130
Travel Time (hr)	6.2	6.0	5.9	5.8	5.9	6.0
Total Delay (hr)	0.6	0.5	0.5	0.5	0.5	0.5
Total Stops	265	250	254	248	273	257
Fuel Used (gal)	5.3	5.2	5.1	5.0	5.0	5.1

1: Westbrook St/Site Driveway & Jetport Blvd/Westbrook Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.1
Total Del/Veh (s)	0.9	0.6	3.9	1.3
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

2: International Pkwy & Jetport Blvd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.0	0.1	0.2	0.2
Total Del/Veh (s)	5.1	5.1	1.0	0.8	2.8
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.2
Total Del/Veh (s)	3.5
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Westbrook St/Site Driveway & Jetport Blvd/Westbrook Street

Movement	WB	NB
Directions Served	LTR	LTR
Maximum Queue (ft)	19	47
Average Queue (ft)	1	18
95th Queue (ft)	11	43
Link Distance (ft)	601	638
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: International Pkwy & Jetport Blvd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	94	88	43	42
Average Queue (ft)	45	35	6	3
95th Queue (ft)	76	69	27	19
Link Distance (ft)	456	1233	318	558
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 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	741	735	759	744	738	743
Vehs Exited	743	735	760	749	742	746
Starting Vehs	9	7	7	12	8	8
Ending Vehs	7	7	6	7	4	5
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0
Travel Distance (mi)	166	162	162	163	166	164
Travel Time (hr)	7.7	7.6	7.5	7.6	7.8	7.6
Total Delay (hr)	0.8	0.9	0.9	0.9	0.9	0.9
Total Stops	338	325	330	315	323	326
Fuel Used (gal)	6.7	6.6	6.5	6.6	6.7	6.6

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	741	735	759	744	738	743
Vehs Exited	743	735	760	749	742	746
Starting Vehs	9	7	7	12	8	8
Ending Vehs	7	7	6	7	4	5
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0
Travel Distance (mi)	166	162	162	163	166	164
Travel Time (hr)	7.7	7.6	7.5	7.6	7.8	7.6
Total Delay (hr)	0.8	0.9	0.9	0.9	0.9	0.9
Total Stops	338	325	330	315	323	326
Fuel Used (gal)	6.7	6.6	6.5	6.6	6.7	6.6

1: Westbrook St/Site Driveway & Jetport Blvd/Westbrook Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.1
Total Del/Veh (s)	0.8	0.5	3.8	1.2
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

2: International Pkwy & Jetport Blvd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.0	0.3	0.2	0.2
Total Del/Veh (s)	6.8	6.6	1.5	0.9	3.3
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.2
Total Del/Veh (s)	4.0
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Westbrook St/Site Driveway & Jetport Blvd/Westbrook Street

Movement	WB	NB
Directions Served	LTR	LTR
Maximum Queue (ft)	9	60
Average Queue (ft)	0	21
95th Queue (ft)	5	49
Link Distance (ft)	601	638
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: International Pkwy & Jetport Blvd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	118	93	67	43
Average Queue (ft)	54	38	16	7
95th Queue (ft)	93	70	46	30
Link Distance (ft)	456	1233	318	558
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 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	584	583	595	612	579	591
Vehs Exited	587	583	593	611	582	590
Starting Vehs	6	4	5	6	6	3
Ending Vehs	3	4	7	7	3	2
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0
Travel Distance (mi)	158	151	160	158	149	155
Travel Time (hr)	7.3	7.0	7.4	7.4	7.0	7.2
Total Delay (hr)	0.7	0.7	0.7	0.7	0.7	0.7
Total Stops	342	343	365	345	344	346
Fuel Used (gal)	6.3	5.9	6.3	6.3	5.9	6.1

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	584	583	595	612	579	591
Vehs Exited	587	583	593	611	582	590
Starting Vehs	6	4	5	6	6	3
Ending Vehs	3	4	7	7	3	2
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0
Travel Distance (mi)	158	151	160	158	149	155
Travel Time (hr)	7.3	7.0	7.4	7.4	7.0	7.2
Total Delay (hr)	0.7	0.7	0.7	0.7	0.7	0.7
Total Stops	342	343	365	345	344	346
Fuel Used (gal)	6.3	5.9	6.3	6.3	5.9	6.1

1: Westbrook St/Site Driveway & Jetport Blvd/Westbrook Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.1	0.1
Total Del/Veh (s)	1.5	0.6	4.3	2.5	1.7
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

2: International Pkwy & Jetport Blvd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.0	0.2	0.2	0.2
Total Del/Veh (s)	5.4	5.4	1.0	1.0	3.1
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.2
Total Del/Veh (s)	4.2
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Westbrook St/Site Driveway & Jetport Blvd/Westbrook Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	15	23	50	38
Average Queue (ft)	1	2	18	19
95th Queue (ft)	9	11	44	39
Link Distance (ft)	1233	601	638	141
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: International Pkwy & Jetport Blvd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	86	77	32	30
Average Queue (ft)	46	40	6	4
95th Queue (ft)	71	67	24	21
Link Distance (ft)	456	1233	318	558
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 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	839	858	843	851	797	839
Vehs Exited	837	862	845	848	793	837
Starting Vehs	4	12	10	8	8	5
Ending Vehs	6	8	8	11	12	10
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0
Travel Distance (mi)	197	198	201	191	188	195
Travel Time (hr)	9.3	9.5	9.6	9.2	9.0	9.3
Total Delay (hr)	1.1	1.4	1.3	1.2	1.2	1.2
Total Stops	412	427	456	430	414	428
Fuel Used (gal)	8.0	8.1	8.1	7.9	7.6	7.9

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	839	858	843	851	797	839
Vehs Exited	837	862	845	848	793	837
Starting Vehs	4	12	10	8	8	5
Ending Vehs	6	8	8	11	12	10
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0
Travel Distance (mi)	197	198	201	191	188	195
Travel Time (hr)	9.3	9.5	9.6	9.2	9.0	9.3
Total Delay (hr)	1.1	1.4	1.3	1.2	1.2	1.2
Total Stops	412	427	456	430	414	428
Fuel Used (gal)	8.0	8.1	8.1	7.9	7.6	7.9

1: Westbrook St/Site Driveway & Jetport Blvd/Westbrook Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.1	0.1
Total Del/Veh (s)	1.7	0.6	4.5	4.7	2.1
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

2: International Pkwy & Jetport Blvd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.0	0.3	0.2	0.2
Total Del/Veh (s)	7.7	8.1	1.6	1.3	4.0
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.2
Total Del/Veh (s)	5.0
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Westbrook St/Site Driveway & Jetport Blvd/Westbrook Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	21	19	53	44
Average Queue (ft)	1	1	19	15
95th Queue (ft)	10	9	45	38
Link Distance (ft)	1233	601	638	141
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: International Pkwy & Jetport Blvd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	139	103	66	44
Average Queue (ft)	59	48	18	11
95th Queue (ft)	103	83	52	38
Link Distance (ft)	456	1233	318	558
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 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	584	583	595	612	579	591
Vehs Exited	586	583	593	611	582	590
Starting Vehs	6	4	5	6	6	4
Ending Vehs	4	4	7	7	3	4
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0
Travel Distance (mi)	158	151	160	158	149	155
Travel Time (hr)	7.9	7.5	8.0	8.0	7.5	7.8
Total Delay (hr)	1.3	1.2	1.3	1.3	1.2	1.3
Total Stops	792	764	805	800	756	781
Fuel Used (gal)	6.7	6.3	6.6	6.7	6.2	6.5

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	584	583	595	612	579	591
Vehs Exited	586	583	593	611	582	590
Starting Vehs	6	4	5	6	6	4
Ending Vehs	4	4	7	7	3	4
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0
Travel Distance (mi)	158	151	160	158	149	155
Travel Time (hr)	7.9	7.5	8.0	8.0	7.5	7.8
Total Delay (hr)	1.3	1.2	1.3	1.3	1.2	1.3
Total Stops	792	764	805	800	756	781
Fuel Used (gal)	6.7	6.3	6.6	6.7	6.2	6.5

1: Westbrook St/Site Driveway & Jetport Blvd/Westbrook Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.1	0.1
Total Del/Veh (s)	4.0	4.8	3.8	2.6	4.0
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

2: International Pkwy & Jetport Blvd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.0	0.2	0.2	0.2
Total Del/Veh (s)	4.7	5.4	4.8	5.3	5.0
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.2
Total Del/Veh (s)	7.5
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Westbrook St/Site Driveway & Jetport Blvd/Westbrook Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	53	84	46	34
Average Queue (ft)	24	30	18	19
95th Queue (ft)	44	63	42	39
Link Distance (ft)	1233	601	638	141
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: International Pkwy & Jetport Blvd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	80	84	56	84
Average Queue (ft)	44	40	33	44
95th Queue (ft)	68	68	52	70
Link Distance (ft)	456	1233	318	558
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 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	839	857	843	851	797	839
Vehs Exited	837	863	846	852	793	838
Starting Vehs	5	13	11	12	10	8
Ending Vehs	7	7	8	11	14	9
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	1	0	0	0	0
Travel Distance (mi)	197	198	201	192	188	195
Travel Time (hr)	10.1	10.3	10.4	10.0	9.7	10.1
Total Delay (hr)	1.9	2.1	2.1	2.0	1.9	2.0
Total Stops	1034	1042	1045	1006	980	1022
Fuel Used (gal)	8.5	8.7	8.7	8.5	8.1	8.5

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	839	857	843	851	797	839
Vehs Exited	837	863	846	852	793	838
Starting Vehs	5	13	11	12	10	8
Ending Vehs	7	7	8	11	14	9
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	1	0	0	0	0
Travel Distance (mi)	197	198	201	192	188	195
Travel Time (hr)	10.1	10.3	10.4	10.0	9.7	10.1
Total Delay (hr)	1.9	2.1	2.1	2.0	1.9	2.0
Total Stops	1034	1042	1045	1006	980	1022
Fuel Used (gal)	8.5	8.7	8.7	8.5	8.1	8.5

1: Westbrook St/Site Driveway & Jetport Blvd/Westbrook Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.1	0.1
Total Del/Veh (s)	3.7	4.8	3.8	4.6	4.0
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

2: International Pkwy & Jetport Blvd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.0	0.3	0.2	0.2
Total Del/Veh (s)	5.4	6.5	6.6	5.9	6.1
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.2
Total Del/Veh (s)	8.3
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Westbrook St/Site Driveway & Jetport Blvd/Westbrook Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	51	76	53	44
Average Queue (ft)	22	27	19	15
95th Queue (ft)	39	61	45	38
Link Distance (ft)	1233	601	638	141
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: International Pkwy & Jetport Blvd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	114	88	95	96
Average Queue (ft)	52	47	55	47
95th Queue (ft)	87	76	84	77
Link Distance (ft)	456	1233	318	558
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

ACORN ENGINEERING, INC.

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

April 8th, 2024

Subject: 1060 Westbrook Street – Major Site Plan Application neighborhood meeting certification

I, Peter Heil, hereby certify that a neighborhood meeting was held on April 4th, 2024 at 145 Jetport Boulevard at 5:30 pm.

I also certify that on March 18th, 2024, 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,

Peter F. Heil, 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: March 18, 2024

On behalf of Giri Hotel Management, we are pleased to invite you to a neighborhood meeting to discuss the Major Site Plan Application for the proposed redevelopment of 1060 Westbrook Street. The parcel is currently vacant and located within the AB Airport Business zoning district. The project proposes to develop the parcel into a 120-Room 3-story Hyatt Studios, with a 106-space parking lot, and other site, landscaping, and utility improvements.

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. If you have any questions, please call (207) 775-2655.

Meeting Location: Willow Room at the Hilton Garden Inn Jetport
145 Jetport Boulevard, Portland, ME 04102

Meeting Date/Time: Thursday, April 4, 2024, at 5:30 p.m.

Note: Under the City of Portland land use code, an applicant for a major site plan, master development plan, subdivision of over five lots, or zoning map amendment 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.

Sign-in Sheet

Name	Email
Woody Howard	gibwoody@aol.com
Tom Ainsworth	Tainsworth@207@gmail.com
Mark Okrent	Mokrent@bates.edu
Getchen Halpert	Ghalpert@stny.rr.com
Hope Hampton	Hhampton1@gmail.com
Mathew Davis	Mathewwilliamdavis@gmail.com
Carter Waldren	Carterwaldren1966@gmail.com

Project Team	
Pete Heil, P.E.	Pheil@acorn-engineering.com
David Horne, E.I.	dhorne@acorn-engineering.com

Giri Portland Westbrook INC. – 1060 Westbrook Street
Major Site Plan Application

Neighborhood Meeting Minutes

April 4, 2023 / 5:30 pm
145 Jetport Boulevard – Portland

Project Team Attendees:

Pete Heil (PH): Civil Engineer/Presenter (Acorn Engineering)

David Horne (DH): Civil Engineer/Note Taker (Acorn Engineering)

The meeting started at approximately 5:35 pm.

Presentation:

Pete Heil:

- Welcomed audience to neighborhood meeting.
  - Neighborhood Meeting is a city requirement for the Major Site Plan Application.
  - Sign In sheet is available for everyone which will be submitted to the City and becomes public record along with the meeting minutes.
  - The planning board workshop is scheduled for April 23th at City Hall. Agenda has not yet been released, but can be found on the City's website typically the Friday before.
- Project Overview:
  - The project proposes a new hotel on the corner of Westbrook Street and Jetport Boulevard.
  - The project is proposing a 3-story hotel with 120 rooms and 106 parking spaces.
  - We have coordinated with our traffic engineer and they as well as DPW have suggested a new 4-way stop at the Jetport Boulevard/ Westbrook Street intersection, with the forth leg being the new project access drive.
  - Two Vegetated Underdrained Soil Filters will provide stormwater treatment and detention for the site and will ultimately flow to the stormwater system within Jetport Boulevard.
  - A new sidewalk is proposed to be installed along the Westbrook Street frontage of the parcel.

Comments, Questions & Answers:

Please note that the following questions and answers were not recorded verbatim and aim to represent and summarize the actual questions, answers, and discussion that took place at the meeting.

Neighbor: This public meeting should not be considered official because of the storm and the power outages.

- **Pete**: This meeting is the required neighborhood meeting as required as part of the City's Site Plan review requirements and meets the standards outlined within the land use code.

Neighbor: The car rental use adjacent to the site returns cars are racing along the street. Please take into consideration the safety of pedestrians walking along the street.

- **Pete**: As part of the proposed intersection improvements, a new 4-way stop is being proposed to address traffic at this intersection.

Neighbor: Have you taken into consideration utilizing the existing stormwater basin within the parcel? Also, the stormwater system from the Embassy Suites has not been working properly. Are you aware of that?

- **Pete**: After our due diligence researching the existing system, we are unaware of having rights to utilize the existing stormwater basin which is why we propose new stormwater BMPs separate from this system. We don't have plans for the Embassy Suites project, so we have not been able to analyze the stormwater conditions at that location and not proposing any connections to that system.

Neighbor: Who sold the land to GIRI Portland Westbrook INC.

- **Pete**: Toye Reality Holdings, LLC.

Neighbor: Has the sale gone through?

- **Pete**: I believe the sale closed sometime in 2020.

Neighbor: The primary entrance of the hotel is right at the intersection of Westbrook Street and Jetport Boulevard. There was a death at this location last summer. Is there a possibility of reconfiguring the site entrance to make it safer?

- **Pete**: We have had discussion with DPW to address the traffic concerns which is why we are proposing a 4-way stop at this location. We are proposing to trim back the existing tree line to provide more sight distance.

Neighbor: The expansion of the rental car business will result in more traffic. Have you accounted for this in your design?

- **Pete**: Our project submission has been submitted prior to the potential rental car expansion, and as such the design for those improvements will have to consider this project as part of their design.

Neighbor: There is a lot of noise and lights stemming from the rental company.

- **Pete**: Understood.

Neighbor: Why are the hotel rooms so close to the property line. Will there be a buffer between the building and the neighboring street?

- **Pete**: The FAA has provided us with a building envelope that we needed to comply with. We have explored numerous iterations of building footprints/orientations as part of our design process and based on requirements set forth by the FAA, the building footprint is located within the only area that meets such requirements, both horizontally and vertically in the site.

Neighbor: What are the setback requirements for this parcel.

- **Pete**: There are no side and rear setback requirements for this parcel within the A-B zone. There is a 20' front yard setback along Westbrook Street.

Neighbor: Will the site be above the existing grade?

- **Pete**: Excavation of the site will occur resulting in the building being set a few feet below the existing grade at an FFE of 85' in the western corner of the site. The site does have a fairly steep slope from the roadway entrance, which will require some fill to be brought into the site.

Neighbor: Is it possible to build a taller retaining wall to help the neighborhood privacy

- **Pete**: The wall has been designed to accommodate the proposed grading and a taller wall would limit flow away from the building and potentially create ponding issues for the hotel.

Neighbor: Have you considered a buffer between the retaining wall and the property line by coordinating with the neighboring parcel?

- **Pete**: Due to the allowable FAA building envelope and providing access around the building, there is limited space to provide additional buffering. We will evaluate as designs progress.

Neighbor: Where will the HVAC systems be located?

- **Pete**: Generally, the HVAC systems will be located on the top of the building, however a MEP has not yet been brought on and final designs are still to be determined.

Neighbor: Can a request be made to move the HVAC systems as far away from the neighbors as possible.

- **Pete**: This will be discussed with the MEP.

Neighbor: Can the project be moved plan right 20' to create room for a buffer?

- **Pete**: No, we are very constrained by the FFA building envelope.

Neighbor: The addition of a hotel in this location results in a significant loss to property value for the neighbors.

Neighbor: Why are there stormwater VUSFs?

- **Pete**: The VUSFs provide stormwater treatment and detention for the project in compliance with the City's regulations. The DEP has given delegated review authority for Stormwater Law to the City of Portland. Additionally, the City has their own regulations for stormwater treatment. To meet these requirements, we have proposed two stormwater BMPs within the site.

Neighbor: Have you done any wetland mapping for the site?

- **Pete**: Yes, the delineation has been completed by Flycatcher in 2020. We are avoiding disturbance to the existing manmade wetlands, including the existing stormwater detention area along Westbrook Street.

Neighbor: Can you explain the VUSFs a bit more?
- **Pete**: They are designed to treat 95% of all impervious surface and 80% of all developed area. The parking lot has a catch basin system that drains stormwater runoff to two VUSFs and the stormwater runoff from the roof of the building will be directed to the soil filters.

Neighbor: Have you considered a land swap?
- **Pete**: At this time, I am unaware of any potential land swap discussions.

Neighbor: Is there ledge within the existing site? Will there be blasting?
- **Pete**: Most of the existing site contains ledge. As of now, the project will require some ledge excavation. We have included notes about pre-blast surveys within our plan set but ultimately the methods of ledge removal is subject to future contractors means and methods and will be in conformance with the City's regulations.

Neighbor: How will we know if blasting will be required?
- **Pete**: It will be part of the building permit process. After Planning Board approval, the project will need to pull a building permit, which should include potential blasting information at that time.

Neighbor: How to you calculate the amount of parking spaces?
- **Pete**: The City of Portland has their own requirements. (1 space/ 4 rooms) as identified in the Land Use Code. Our traffic engineer has also completed a parking study to show the amount of parking we are providing is adequate for the project, in conformance with the ITE Parking Generation rates.

Neighbor: Is the amount of parking shown considered more than usual?
- **Pete**: The amount of parking shown is more than the City's requirement for the land use. However, our traffic engineer prepared a traffic study that shows the parking proposed is in conformance with the ITE parking generation rates for a hotel use.

Neighbor: Is there a better way to configure parking for a larger buffer?
- **Pete**: We are constrained by the existing site conditions primarily the FAA building footprint and additionally the grading throughout the site. We have evaluated a few different options for the site parking configuration and the parking lot shown is the most practical layout given these constraints.

Neighbor: If the driveway is blocked by the sun ice could potentially be a problem for the driveway/ walkway?

Neighbor: Would the driveway be less steep if it was moved down (to the north) Westbrook Street?
- **Pete**: Westbrook Street grades slopes down further up the road you go so the driveway slope would increase and be too steep if it were located any more north of where it is proposed, currently shown at 9.5%.

Neighbor: Is there a chance of moving the driveway within the abutting parking lot?

- **Pete**: That land is private property and need to have a driveway that connects to the public right of way.
- **Neighbor**: The car rental company to the south of the project may have interest in providing a shared access drive. Since they are in the middle of their own site plan, a discussion should be had with the City to address the multiple projects that are happening in and around the project area of interest.
- **Neighbor**: We have had discussions with Enterprise to improve the quality of the site including motion lighting.
- **Pete**: Understood. We have not heard of such agreements. Coordination of projects is always ideal but have not had any discussions with the abutter about shared easements at this time.

Neighbor: Will there be lighting proposed? Can we request the lighting to be motion sensitive? How tall is it?

- **Pete**: The parking lot pole mounted lighting is 20' and the wall mounted is 12' tall. The lights would likely be set on timers to dim lighting levels after hours.
- **Neighbor**: Can we lower the lights?
- **Pete**: If we lowered the lights there would be more lights proposed. All of the proposed lights are Dark Sky compliant.

Neighbor: What is Dark Sky compliance?

- **Pete**: It is a requirement by the city to reduce light pollution stemming from the site.

Neighbor: Can you explain the adjusted treeline?

- **Pete**: We will be trimming trees as part of this project to provide area for project, including the hotel, parking, the stormwater treatment area, and to provide more sight distance at the 4-way stop.

Neighbor: Will there be increased flow (stormwater) to the city system because of the added impervious surface?

- **Pete**: As flows leave the site we will retain and control peak flow runoff to be less than the pre-development conditions to not overburden the city stormwater system. The systems will also be providing treatment prior to entering into the City's system

Neighbor: Will there be a plan detailing how many trees will be cut? Can we have a diagram of how many trees will be planted?

- **Pete**: As part of the landscaping requirements with the city we are proposing 25 new trees to be planted around the site.

Neighbor: Is there a wetland where you proposing to be building the parking lot?

- **Pete**: No.

Neighbor: Is Westbrook Street one or two way.

- **Pete**: It is two ways.

Neighbor: Will the plants be native species?

- **Pete**: Yes, that is a requirement.

Neighbor: Were will the trees go?
- **Pete**: They will be planted in the landscaped islands and around the rear of the building as well as along the property line.

Neighbor: Will a light be proposed on the driveway?
- **Pete**: Yes, one light is proposed along the access drive to provide proper lighting coverage at the new intersection.

Neighbor: Where will the hotel sign go?
- **Pete**: We have not investigated this at this point. The project will require to file a separate sign application as part of the City's signage requirements.

Neighbor: Can you provide us with topo information into the neighboring street?
- **Pete**: Our topo is limited to the property line. The building height will be 37.5' above the FFE of 85'.
- **Neighbor**: Can you provide topo at the next meeting so it can give us context as to where the building will be in relation to the neighboring street?
- **Pete**: We will investigate this.

Neighbor: What will the colors look like.
- **Pete**: *Shows color scheme*
- **Neighbor**: That's an ugly building. White is a very reflective color and will take away from any landscaping.
- **Pete**: Understood. I cannot speak on the architectural narrative of the project.
- **Neighbor**: The colors of the building are a proprietary scheme provided by a hotel brand. There isn't much freedom when it comes to the choice of the color.

Neighbor: Will it (building height) be higher or lower than the Embassy Suites?
- **Pete**: It will be lower than the Embassy Suites.

Neighbor: Has there been a Hyatt Studios with other color scheme?
- **Pete**: We can follow up with the architect on this inquiry.

Neighbor: How wide are the rooms?
- **Pete**: Appears to be a little over 12' each.
- **Neighbor**: Taking out 6 rooms (2 per floor) on the lower branch of the hotel will allow the building to be shifted around 13' plan right. This would allow a larger buffer between the building and the property line. If the loss of rooms is a significant detriment to revenue maybe the smaller rooms on the right side of the building could be converted to larger rooms assuming there is a larger rate for those floorplans.

Neighbor: The zoning district has zero (side & rear) setbacks can you explain that?
- **Pete**: Anything within the A-B Airport Business Zone has no side and rear setbacks requirements however there is a 20' setback on Westbrook Street as identified in the City's Land Use Code.

Neighbor: Have you considered working with Enterprise to reestablish the wooded buffer between Enterprise and the neighborhood?

- **Pete**: At this time, this has not been coordinated with Enterprise and unaware of their plans.

Neighbor: When is construction scheduled to start?
- **Pete**: Ideally late summer/early fall 2024, but subject to final approvals and building permit process.

Neighbor: Is there anything that will hinder this projects approval?
- **Pete**: We have been coordinating with various sub-consultants to identify the site constraints, including geotechnical, traffic, and natural resources and have prepared our plans to limit the proposed impact as much as possible. At this point, we are comfortable with our proposal, but still awaiting final comments received through the permitting process.

Neighbor: Because the project is located in the airport business zone, is this project getting special rights?
- **Pete**: The project is in conformance with the A-B zoning district requirements.

Neighbor: What is the process at the planning board meeting.
- **Pete**: The first workshop with the Planning Board is our first presentation to the Board, which will be similar to tonight's meeting. We will provide a brief presentation and then the Board will ask opening questions, then open up public comment, and then turn back to the applicant for additional questions. Subject to the Board and Staff are comfortable to move the project forward after the workshop, a final hearing would be held after a comment response package has been submitted to address comments received.

Neighbor: What is the exact date the property was purchased?
- **Pete**: We are unsure of the exact date. I believe the sale closed in 2020.

Neighbor: Who is the city's third-party reviewer (stormwater).
- **Pete**: As part of the City's staff review process, along with their own departments internal review, they may contract out third party review, however all comments are incorporated into a single staff review memo through the Planning Department, so unsure who specifically the third party reviewer will be for this project.

Neighbor: If you're adding stormwater discharge to the existing drainage system which could be in disrepair, would the existing drainage system get rehabilitated as part of the project?
- **Pete**: The decision is ultimately up to DPW whether they would require the existing stormwater system be improved. The City does have the right to request the update of the existing stormwater system as necessary, however at this time we are unaware of any such requirements for this project.

Neighbor: Will there be wires for the lights?
- **Pete**: All electrical wires will be underground from the right of way to serve the project.

Neighbor: Does the sidewalk that is proposed go anywhere or end at the driveway?
- **Pete**: Yes, one of the comments we just received from the City was to extend the sidewalk across the driveway entrance and provide a new crossing across Westbrook Street at the 4-way stop.

Neighbor: We would like to request speed bumps.
- **Pete**: That is up to DPW to decide.

Neighbor: We will request another meeting as this is unacceptable to have this short of notice.
- **Pete**: Notices were sent out on March 18th, 2024.

Pete: Thank you everyone for coming.

The meeting concluded at approximately 7:00 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,



David Horne, EI
Design Engineer, Acorn Engineering, Inc.
Dhorne@acorn-engineering.com

ACORN ENGINEERING, INC.

Maya Balassa – City Planner
Department of Planning & Urban Development
City Hall, 389 Congress Street, 4th Floor
Portland, Maine 04101

April 16, 2024

Subject: Hyatt Studios Hotel Development
1060 Westbrook Street, Portland, ME
Comment Response Letter

On behalf of Giri Portland Westbrook Inc., we are pleased to respond to the comments that we received dated March 26th, 2024, related to the proposed hotel development project located at 1060 Westbrook Street in Portland, ME.

Comments Related to Transportation Standards

Impact on Surrounding Street Systems

Overview *– The hotel driveway is proposed to connect with the intersection of Westbrook Street and Jetport Blvd. and proposes to alter the intersection into a four-way stop. His application proposes to install a new section of sidewalk along Jetport Blvd. This project is not anticipated to generate more than 100 vehicle trips during peak hours and therefore a Traffic Movement Permit is not required. The applicant has provided a Traffic Impact Study.*

Comment *– A traffic operation analysis was performed at the Jetport Boulevard/Westbrook Street/Site Driveway and Jetport Boulevard/International Parkway intersections. The model analysis indicates both intersections will operate at acceptable levels of service during the AM and PM peak hour. It should be confirmed if the analysis reflected the All-way Stop condition at the Jetport Boulevard/Westbrook Street/Site Driveway intersection. The applicant shall provide the Synchro model files for review.*

Response – A synchro model has been analyzed with an all-way stop condition at both intersections and all approaches at both intersections still operate at a LOS A during both peak hours. Synchro files are attached.

Comment *– The applicant conducted an All-Way Stop analysis at the Jetport Boulevard/International Parkway intersection. Based upon their analysis, a multiway stop condition is not warranted. The applicant should note if the analysis was based on the new or old MUTCD and update the analysis if the old version was used. The applicant does recommend some vegetation removal which would improve sight distance, and this should be a requirement for their approval.*

Response – The analysis was based on the old MUTCD and the report has been updated to reflect new MUTCD requirements. An all-way stop is warranted at this location.

Comment *– The applicant provided a sight distance graphic which is acceptable. Staff and peer reviewers will work with DPW in identifying specific design details for the site driveway intersection and implementation of the all-way stop condition.*

Response – Understood. Thank you for your review.

Comment *– The applicant shall provide an accessible path from the sidewalk in the ROW to the proposed building.*

Response – The design has been updated to implement a walkway from the ROW to the proposed building. See Sheet C-10 for additional information. It should be noted that the walkway is 8.3% running slope and will require handrails and landings to provide accessible access.

Comment *– The applicant shall dimension existing conditions in the ROW in addition to the proposed improvements on the plan view sheets. For example, ROW, street, lanes sidewalk, esplanade driveways (and other improvements) widths as well as when a width changes.*

Response – The plans have been updated to show dimensions of various existing conditions within the ROW. Please see the Site Plan (Sheet C-10) and the Exisitng Conditions Survey for additional information.

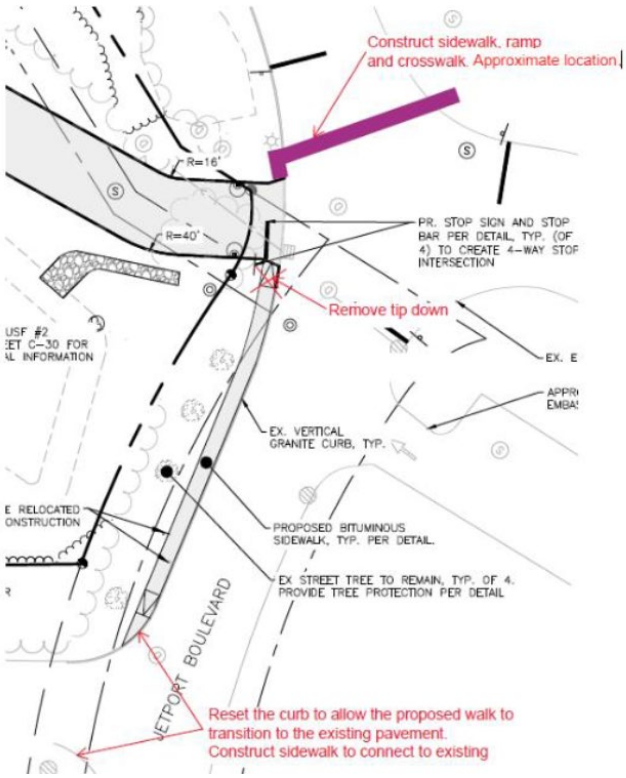
Comment *– The applicant will need to label and or provide spot grades and slopes for the proposed sidewalk, curb ramps and driveway improvements at grade breaks.*

Response – The grading plan has been updated to show spot grades and slopes for proposed sidewalk, curb ramps, and driveway improvements at grade breaks. See Sheet C-30 for additional information.

Comment *– The stop bar shall be painted outside of the limits of the driveway and sidewalk.*

Response –The stop bar location has been updated. See Sheet C-10 for additional information.

Comment *– The applicant shall construct compliant pedestrian ramps (with landings and sidewalk connections where needed) and a crosswalk leading to and from the property (across Westbrook Street) per the City's Technical Manual section one. The applicant shall construct complaint pedestrian ramps and a crosswalk at the intersection of Westbrook Street and Jetport Boulevard (see attached image of approximate location)*



Response – Thank you for the sketch above. The suggested crosswalk and curb ramps have been incorporated into the design as part of our site plan application. See Sheets C-10 & C-30 for additional information.

Access and Circulation

Overview *– Access to the site is provided via a 24' driveway connecting to the intersection of Westbrook St. and Jetport Blvd. Internal circulation within the parking area is provided by 24' drive aisles. Internal sidewalks are proposing to connect parking areas with the main hotel entrance points and to the rear outdoor seating area.*

Comment *– A pedestrian facility from the building to Jetport Boulevard and to the existing sidewalk system on Westbrook Street shall be provided.*

Response – The design has been updated to implement a walkway from the ROW to the proposed building. See Sheet C-10 for additional information.

Comment *– The applicant shall attempt to provide internal pedestrian circulation (walkways for the users) throughout the parking lots and connect to the building walkways.*

Response – Internal pedestrian circulation has been updated to provide additional walkways and crosswalks to connect the parking lot and the building walkways. See Sheet C-10 for additional information.

Comment *– The entrance to the property shall be constructed as a driveway not a roadway. The sidewalk and driveway shall be reconstructed in accordance with the City's Sidewalk and Driveway Apron Material Policy and current City standards. The applicant shall update the plans and provide spot grades and slopes for the proposed sidewalk. The sidewalk material shall be continued through the driveway aprons at grade with the proposed sidewalk and not in excess of 2% cross-slope per the current City standards.*

Response – The site entrance has been updated to conform to city standards including driveway apron material policy and cross slopes. Spot grades have been added to the plan set to clarify cross slopes are not in excess of 2% at the sidewalk locations. Please see sheets C-10 & C-30 for additional information.

Comment *– The driveway shall be constructed per the City Technical Manual Standard for COMMERCIAL/INDUSTRIAL DRIVEWAY APRON I-9B. Construct the sidewalk adjacent to the driveway apron to the property line and transitions the sidewalk to connect to the proposed sidewalk behind the curb.*

Response – The driveway has been updated to reflect the City of Portland detail I-9B. Please see sheets C-10 & C-30 for additional information.

Parking

Overview *– This application proposes a total of 106 parking spaces. The proposed parking will be utilized by short-term hotel guests, hotel staff and long term "park and fly" patrons. The applicant intends to provide long-term parking for hotel guests traveling from the Jetport. Six (6) bicycle parking spaces are provided as well as 21 level-two EV charging stations.*

Comment *– The number of parking spaces proposed is consistent with the ITE Parking Generation Manual and therefore reasonable. It should be noted that the 6th Editon of The ITE Parking Generation Manual estimates 78 spaces using the average rate and 103 spaces for the fitted curve method. The applicant should discuss the "park and fly" operations and how that may impact traffic levels and parking supply.*

Response – The hotel will prioritize parking for current hotel guests above any potential park and fly offerings based on the limited parking available.

It should also be noted that a parking space was lost to incorporate the pedestrian walkway to the ROW. The project now proposes 105 parking spaces.

Comment *– Some of the parking spaces are 21' long and exceed the city's standard. An explanation shall be provided.*

Response – The single 21'x11' parking space is an ADA EV parking spot that provides space for a wheelchair to maneuver around the vehicle and remain within the parking space. It is our understanding that this condition is a newer ADA recommendation.

Comments Related to Environmental Quality Standards

Preservation of Significant Natural Features

Overview *– The current site is undeveloped and consists of a cleared area covered by grass and low shrubs and several on-site trees located primarily at the front and sides of the parcel. The applicant has not submitted a full tree inventory and are currently investigating the quantity of trees 10 inches DBH or greater located within the limits of construction. Given the location of the building and parking facilities it is anticipated that a minimum of 30% of the trees 10 inches of greater will be preserved.*

Comment *– See comments in "Site landscaping and Buffers"*

Response – See below responses.

Site Landscaping and Buffers

Overview *– The application proposes 24 trees and approximately 55 shrubs to be located throughout the site. Four existing street trees will be preserved and two will be removed due to utility conflicts.*

Comment *– The tree planting details shows the tree planted at a depth where the trunk flare is below grade and the mulch is applied right up to the trunk, would you please provide a tree planting detail that shows the bottom of the trunk flare at or slightly above grade and the mulch tapered to the bottom of the trunk flare as detailing ANSI A300 Ch 6: Planting and Transplanting (See attached copy)*

Response – Please provide the *ANSI A300 Ch 6: Planting and Transplanting* detail. We will investigate and update the trunk flare once the details are received.

Comment *– Are the two street trees proposed for removal going to be replanted or is there underground infrastructure that would conflict.*

Response – The two street trees proposed for removal are unable to be replaced due to underground utility conflicts.

Comment *– Is it possible to include setback plantings along Westbrook Street to plant some larger growth form species on the grassy knoll behind the power lines?*

- *If that interferes with the drainage easement is it possible to include smaller growth form plantings along Westbrook St underneath the power lines?*

Response – It should be noted that the grassy knoll behind the power lines is a steep slope that grades up to a detention pond. It doesn't appear the applicant has R,T,I to the stormwater easement area and is not proposing any improvements within this area that may not be allowed within the easement.

Water Quality, Stormwater Management and Erosion Control

Overview *– A proposed stormwater drainage system will collect water on site through a new storm drain network that outlets into two (2) vegetated under drained soil filters before being discharged into the existing municipal storm drain network within Westbrook Street. Runoff from the site will be captured within the vegetated soil filters and be released over a period of 24 to 48 hours. The applicant has submitted a full stormwater management plan demonstrating compliance with Section 5 of the technical manual and Maine DEP chapter 500 standards. Full comments from the City's peer-review engineer are detailed below.*

Comment *– The project is required to provide stormwater management in compliance with Maine DEP Chapter 500 and City of Portland Technical Manual Section 5 regulations. The applicant is proposing the utilize vegetated under drained soil filters for stormwater management on the site. We have the following comments:*

- ***Basic Standards*** *– The applicant has provided for erosion and sedimentation control as required for the Basic Standards.*
- ***General Standards*** *– The project has provided two underdrained soil filters to treat the required amount of impervious and developed areas. The systems have been designed per Maine DEP Best Management Practices standards.*
- ***Flooding Standards*** *– The applicant has modeled the site to evaluate the Flooding Standard. There is a very small increase in flow modeled at one point of interest, but I agree that is negligible, and the total site runoff will be reduced by the proposed stormwater management systems in conformance with the flooding standards.*

Response – Thank you for your review.

Comment *– Guardrail Details were included, but I do not see locations shown on the plans. Based on proposed slopes guardrails may be necessary around the perimeter of the parking areas next to the proposed soil filters.*

Response – Guardrail locations are shown in between the parking areas and the soil filters. See Sheet C-10 for additional information.

Comment *– The retaining wall at the western side of the site is noted as designed by others. It is anticipated that there will be drainage from behind that wall, and outlet or connection locations should be anticipated.*

Response – A 4" underdrain is shown to relieve hydrostatic pressure behind the retaining wall. Ultimately the retaining wall and underdrain will be designed by others. See Sheet C-30 for additional information.

Comment *– I have a few recommendations based on my own experience:*

- *I'd recommend that the applicant evaluate their sewer pipe slopes to see if it would be reasonable to adjust and balance – currently there is a section of pipe with a slope of 0.005 followed by a pipe that is 0.08. This is not a requirement, but just a suggestion based on my own experience dealing with issues during construction.*

- *I'd also recommend moving the electrical/communications conduit to avoid the stormdrain crossing next to catch basin 2 if possible – based on typical electrical depths there may be a conflict at this location.*
- *I'd suggest double checking the foundation drain/roof drain connection sizes with the MEP on the project to ensure that 6" will be adequate – where there are a couple of connection locations, this may be ok, but the roof size is fairly large. I would also recommend using backflow preventers to prevent roof drain or site drainage backflow into the foundation drain during larger rain events.*

Response – Thank you for your recommendations. We will take them into account as the project progresses through the Site Plan Application process. See responses below:

- The slope of the proposed sewer pipe has been revised from 0.005 FT/FT to 0.05 FT/FT and a sewer drop manhole has been removed. Please See Sheet C-20 for the revised sewer network.
- Thank you for your comment. We do not foresee any utility conflicts at this time and will re-evaluate potential utility conflicts as the design finalizes prior to construction.
- A note has been added to coordinate the final roof drain size with MEP. We have also added a backflow preventer to the storm drain to prevent stormwater backflow into the foundation drain during larger rain events.

Comments Related to Public Infrastructure + Community Safety Standards

Public Utilities

Overview *– The applicant is awaiting confirmation of ability to serve from Central Maine Power and the Portland Water District, but this application does not anticipate overburdening existing sewer or stormwater utilities on Westbrook Street or Jetport Blvd. The site will connect to the existing Westbrook St. sewer via an 8" main. Underground electrical utilities will connect at Westbrook St. Onsite solid waste detention is provided.*

Comment *– The applicant appears to be aware of an existing private storm drainage line and easement running in a northerly direction adjacent to the site's easterly property line along Westbrook Street. As far as DPW can tell, this storm drain line was built in association with a development at 1050 Westbrook Street around 1989. It appears this private storm drain line discharges into the existing detention basin at the northern end of the site. The existing detention basin is depicted on the applicant's survey. DPW would suggest the applicant compete additional research to figure out where this private storm drainage routes through the property and submit the original private easement document to the Planning department as part of the overall right, title, and interest review for the project. It appears that the applicant is avoiding major impacts to this drainage line, but since the location of the pipe and its discharge into the detention pond is not known, that can't be formally concluded at this time.*

Response – Please refer to the attached ability to serve letters from CMP and PWD. The applicant and engineer have been researching the easement area since at least 2020, including reaching out to City archives in 2020, the Jetport, and digging through old files for adjacent properties that may have shown the original designs and calculations. It is unclear at this time from our research how the design was prepared, but have designed the site to

limit disturbance within the easement area as much as possible. Additional test pit locations have been called out on C-20 & C-30 prior to start of construction and note the contractor shall notify engineer of results. If there are new plans the City finds and can provide, please forward along and we can evaluate and incorporate into the plan set.

Comments Related to Site Design Standards

Massing, Ventilation and Wind Impact

Overview *– The proposed building is three stories in height and given its location is not anticipated to impact nearby buildings or streetscapes.*

Comment *– Please include full height and dimensions in future elevations.*

Response – We have updated the elevations to include the height of the building envelope. Please see plan titled "21. Elevation" for additional information.

Please let us know if you have any additional questions or comments.

Sincerely,

Pete F. Heil, P.E.
Project Manager
Acorn Engineering, Inc.

ACORN ENGINEERING, INC.

Planning & Urban Development Department
Attn: Eric Freeman
City of Portland, Maine
389 Congress Street, 4th Floor
Portland, ME 04101

February 9, 2024
Rev. April 19, 2024

Subject: Major Site Plan & Inclusionary Zoning Application
1060 Westbrook Street, Portland, ME

Mr. Freeman:

On behalf of Giri Hotel Management, we are pleased to submit a Major Site Plan Application for the approximate 4.03-acre parcel located at 1060 Westbrook Street (Chart 207 & 210A, Book A & B, Lot 12 & 7 respectively. The parcel is currently located within the Airport Business AB zone.

The property is currently vacant and undeveloped and contains a drainage and detention easement on the northeast side of the lot that to anticipated to be minimally disturbed as part of the project. Abutting the parcel to the east is the Portland International Jetport across Westbrook Street. The project proposes to develop the parcel into a 120-Room 3-story Hyatt Studios, with a 105-space parking lot, and other site and utility improvements.

Due to the proposal of construction over 10,000 SF, we understand the project is subject to a Major Site Plan Development Application and approval from the Planning Board. This project is also subject to the Conditional Use – Inclusionary Zoning for Hotel Standards. The use of the project is proposed to be solely hotel and there will be no affordable housing component as part of this project and as such the project will be subject to the fee in lieu requirement.

We look forward to your review of this project – if you have any questions regarding these application materials, please do not hesitate to reach out.

Sincerely,

Peter Heil, P.E.
Project Manager
Acorn Engineering, Inc.

HYATT STUDIOS HOTEL DEVELOPMENT

GIRI HOTEL MANAGEMENT

225 WEST SQUANTUM STREET, SUITE 200, QUNICY, MA 02171

LEGEND

EXISTING

REFER TO THE EXISTING CONDITIONS PLAN FOR ADDITIONAL INFORMATION

PROPOSED

- UNDERDRAIN
- GREEN SPACE
- 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
- UNDERGROUND WATER LINE
- MINOR CONTOURS (1 FT)
- MAJOR CONTOURS (5 FT)
- GAS LINE
- STORM DRAIN LINE
- SEWER LINE
- EXISTING/PROPOSED BUILDING
- OVERHEAD ELECTRICAL/TELEPHONE/CABLE
- PROPERTY LINE
- SETBACKS

INDEX

C-01	COVER SHEET & LEGEND
C-02	GENERAL NOTES
EX	BOUNDARY/TOPOGRAPHIC SURVEY BY SPURWINK SURVEYING INC.
C-03	CONSTRUCTION MANAGEMENT PLAN
C-10	SITE PLAN
C-20	UTILITY PLAN
C-30	GRADING & DRAINAGE PLAN
C-40	SITE DETAILS – 1
C-41	SITE DETAILS – 2
C-42	SITE DETAILS – 3
C-43	UTILITY DETAILS – 1
C-44	UTILITY DETAILS – 2
C-45	DRAINAGE DETAILS – 1
C-46	DRAINAGE DETAILS – 2
C-47	EROSION & SEDIMENTATION CONTROL DETAILS
C-48	EROSION & SEDIMENTATION CONTROL 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: BRADLE ROLAND, P.E.
(207) 874-8834

ELECTRIC

CENTRAL MAINE POWER COMPANY (CMP)
162 CANCO ROAD
PORTLAND, MAINE 04103
CONTACT: KATHERINE DUMONT
(207) 828-2882

TELEPHONE

CONSOLIDATED COMMUNICATIONS
(FORMERLY FAIRPOINT)
45 FOREST AVENUE
PORTLAND, MAINE 04101
CONTACT: PAT MORRISON
(207) 745-9363

WATER

PORTLAND WATER DISTRICT
225 DOUGLASS STREET
PO BOX 3553
PORTLAND, MAINE 04104
ATTN: MEANS DIVISION
(207) 774-5961

CABLE

SPECTRUM CABLE
118 JOHNSON ROAD
PORTLAND, MAINE, 04102
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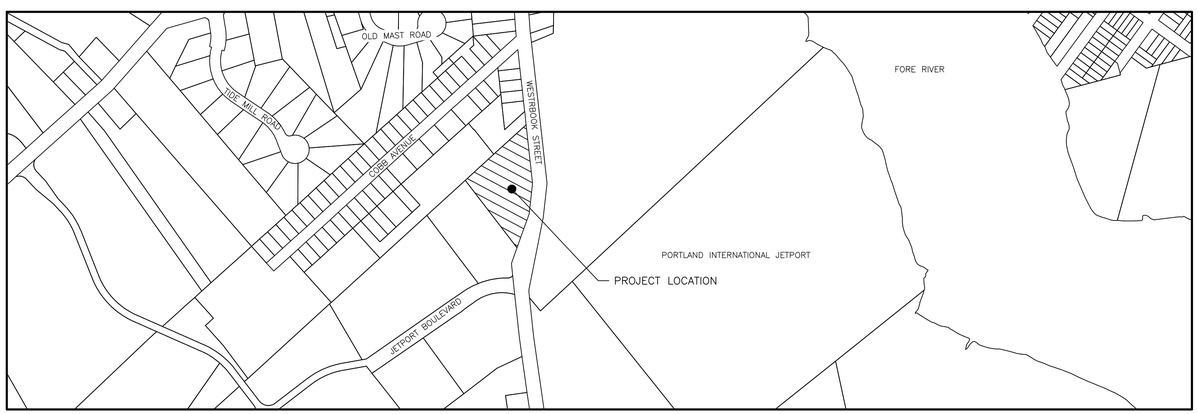
(207) 631-1618

NATURAL GAS

UNITIL SERVICE CORP
1075 FOREST AVENUE
PORTLAND, ME 04103
CONTACT: SCOTT CARPENTER
(207) 541-2536



VICINITY MAP

SCALE: NTS

PROJECT TEAM

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FARMINGDALE, ME 04345
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182 SPURWINK ROAD,
SCARBOROUGH, MAINE 04074
CONTACT: JAMES A. MULLEN PLS
(207) 321-8966

PERMITING
NOT ISSUED FOR CONSTRUCTION

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
DI	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
HDPE	HIGH DENSITY POLY ETHYLENE
ID	INNER DIAMETER
IN.	INCH
INV.	INVERT
L	LENGTH
MAX.	MAXIMUM
MDEP	MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION
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
PC	PRECAST
PE	PROFESSIONAL ENGINEER
PL	PROPERTY LINE
PLS	PROFESSIONAL LAND SURVEYOR
PROP.	PROPOSED
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
PWD	PORTLAND WATER DISTRICT
R	RADIUS
RD	ROOF DRAIN
RET.	RETAINING
ROW	RIGHT OF WAY
S	SLOPE
SD	STORM DRAIN
SDR	STANDARD DIMENSION RATIO
SF	SQUARE FEET
SMH	SEWER MANHOLE
SPEC.	SPECIFICATION
TC	TOP OF CURB
TW	TOP OF WALL
TYP.	TYPICAL
UD	UNDERDRAIN
UGE	UNDERGROUND ELECTRIC
VIF	VERIFY IN FIELD

ISSUED FOR	BY DATE
ATS LETTER	PFH 1/26/2024
CSS	PFH 2/9/2024
MAJOR SITE PLAN	PFH 2/23/2024

DRAWING NAME: COVER SHEET & LEGEND

PROJECT NAME: HYATT STUDIOS HOTEL DEVELOPMENT
1060 WESTBROOK STREET, PORTLAND, ME 04102

CLIENT: GIRI HOTEL MANAGEMENT
225 WEST SQUANTUM STREET, SUITE 200, QUINCY, MA 02171

ACORN ENGINEERING, INC.

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS MADE WITHOUT OUR CONSENT, OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
182 ST. JOHN STREET, PORTLAND, MAINE 04104
PO BOX 3427 (207) 775-2655

FILE:	1133_CIVIL
JN:	1133
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER

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 BOUNDARY/TOPOGRAPHIC SURVEY BY SPURWINK SURVEYING INC. PREPARED FOR ACORN ENGINEERING, INC. DATED 2/1/2020.

8. SUBSURFACE DATA HAVE BEEN OBTAINED BY THE GEOTECHNICAL ENGINEER IN REPORT DATED 11/22/2023 AND SHALL BE INCLUDED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL ALSO REVIEW THE REPORT PRIOR TO SUBMITTING A BID.

9. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS TO THE SITE 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.

10. CONSTRUCTION MANAGEMENT PLAN AND SITE LOGISTICS NARRATIVE SHALL BE REFERRED TO FOR ANTICIPATED PROJECT SCHEDULE AND CLOSURES. TRAFFIC CONTROL SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

11. CONTRACTOR TO DETERMINE SOIL CLASSIFICATION INDEPENDENTLY FOR TRENCH, SHORING, AND OTHER SIMILAR CONSTRUCTION MEANS AND METHODS APPLICATIONS.

12. 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.

13. 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 ADJACENT STRUCTURES. PROVIDE A COPY OF THE SURVEY TO THE OWNER. DOCUMENT WITH PICTURES AT A MINIMUM.

14. THE CONTRACTOR SHALL PROVIDE A GPS MODEL OF THE PROPERTY TO PROVIDE TO ACORN ENGINEERING.

15. THE CONTRACTOR SHALL SURVEY ROCK SURFACE PRIOR TO EXCAVATION AND DEVELOP VOLUME CALCULATIONS TO SHARE WITH THE ENGINEER, ACORN ENGINEERING INC. (ACORN), IF ANY.

16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRESERVATION OF ALL TREES AND SHRUBS ON THE PROJECT WHICH ARE NOT TO BE REMOVED.

17. 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. PRIOR TO BACKFILLING, CONCRETE SHALL BE CURED PER STRUCTURAL ENGINEER'S SPECIFICATIONS.

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.

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 GIRI HOTEL MANAGEMENT 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 A MAJOR SITE PLAN APPLICATION AND AN STORMWATER MANAGEMENT LAW DELEGATED REVIEW APPLICATION FOR THE CITY OF PORTLAND AND A MAINE GENERAL CONSTRUCTION PERMIT WITH THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

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. SEE BORING LOGS FOR ADDITIONAL INFORMATION.

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 MINIMUM SLOPE SHALL MEET OR EXCEED 1.0% IN ALL CASES WHERE NOT NOTED ON THE GRADING PLAN. SLOPES IDENTIFIED ON THE GRADING PLAN TAKE PRECEDENT. 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 DATED 11/22/2023 PREPARED BY THE PROJECT GEOTECHNICAL ENGINEER.

6. CONTRACTOR TO REVIEW EXISTING SOIL CONDITIONS, TEST PITS, AND BORINGS. THERE WILL BE NO ADDITIONAL PAYMENT FOR UNSUITABLE SOILS.

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 TO BYPASS EXISTING SEWER FLOW CONTROL AT CONNECTION TO EXISTING SYSTEM AT NO ADDITIONAL COST.

3. 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.

4. ALL NEW SANITARY MANHOLES SHALL BE VACUUM TESTED AND SHOWN TO PASS PRIOR TO 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.

5. SEWER MANHOLES SHALL BE 4' ID UNLESS OTHERWISE STATED ON THE PLANS.

6. CONTRACTOR TO PROVIDE 5.5' OF COVER FROM TOP OF PIPE TO FINISH GRADE FOR WATER MAINS.

7. THRUST BLOCKS SHALL BE USED FOR THRUST RESTRAINT ON WATER MAINS. DETAIL AND LIMITS FOR THRUST BLOCKS ARE SHOWN WITHIN THE PLAN SET.

8. WATER INFRASTRUCTURE SHALL BE TESTED IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT DOCUMENT "WATER AND SEWER CONSTRUCTION SPECIFICATIONS AND PROCEDURE", MOST RECENT REVISION.

9. 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.

10. 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.

11. ALL WATER PIPE INSTALLATION SHALL CONFORM WITH THE PORTLAND WATER DISTRICT SPECIFICATIONS AND PROCEDURES, MOST RECENT EDITION.

12. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

13. 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.

14. COORDINATE EXIT POINT FOR SECONDARY UTILITY SERVICES WITH THE ARCHITECT/ELECTRICAL ENGINEER. SECONDARY LINE LOCATIONS NOT PROVIDED BY ACORN WITHIN THE UTILITY PLAN.

15. 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.

16. 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.

17. ALL UTILITY PIPES 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.

18. ALL WASTEWATER PIPING, EXCLUDING BUILDING DRAINS, AND ALL PRESSURIZED PIPING, TO INCLUDE WATER MAINS, INSTALLED BENEATH STRUCTURES SHALL BE ENCASED IN CONCRETE.

19. 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.

20. 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,

21. THE CONTRACTOR SHALL ANTICIPATE THAT THE NATIVE SILT AND CLAY SOILS WILL NOT BE SUITABLE FOR PIPE TRENCH BACKFILL IN PAVED AREAS.

22. 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.

23. EXCAVATION TO SUBRADE IN NATIVE SILT AND CLAY SHALL BE COMPLETED WITH A SMOOTH EDGE BUCKET TO MINIMIZE SUBGRADE DISTURBANCE.

24. 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.

4. ACORN COMPLETED A PHASE I - ENVIRONMENTAL SITE ASSESSMENT FOR THE PROPERTY. SEE REPORT DATED MARCH 10, 2020 FOR ADDITIONAL INFORMATION.

BLASTING NOTES:

1. ALL BLASTING ACTIVITIES SHALL BE IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL REGULATIONS.
2. APPLICANTS FOR ALL BLASTING OPERATIONS SHALL OBTAIN AN EXCAVATION PERMIT FROM THE PUBLIC WORKS DEPARTMENT PRIOR TO ANY BLASTING.
3. PRE-BLAST SURVEYS ARE REQUIRED FOR ALL BLASTING OPERATIONS. THE BLASTING CONTRACTOR WILL HIRE AN INDEPENDENT SEISMOLOGIST OR BLASTING CONSULTANT TO PERFORM PRE-BLAST SURVEYS ON ALL STRUCTURES (CONTINGENT UPON PROPERTY OWNER AGREEMENT) WITHIN THE DISTANCES SPECIFIED BELOW. THE INDEPENDENT SEISMOLOGIST OR BLASTING CONSULTANT SHALL NOT BE AN EMPLOYEE OF THE CONTRACTOR, SUBCONTRACTOR, EXPLOSIVES MANUFACTURER, OR EXPLOSIVES DISTRIBUTOR.

SIZE OF BLAST	AMOUNT OF ROCK	SURVEY REQUIREMENT
SMALL	<50 CY	WITHIN 250' OF BLASTING SITE
MEDIUM	50 TO 300 CY	WITHIN 500' OF BLASTING SITE
LARGE	>300 CY	WITHIN 600' OF BLASTING SITE

PERMITING
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR	BY DATE
ATS LETTER	PFH 1/26/2024
CSS	PFH 2/9/2024
MAJOR SITE PLAN	PFH 2/23/2024

DRAWING NAME: **GENERAL NOTES**

PROJECT NAME: HYATT STUDIOS HOTEL DEVELOPMENT
1060 WESTBROOK STREET, PORTLAND, ME 04102

CLIENT: GIRI HOTEL MANAGEMENT
225 WEST SQUANTUM STREET, SUITE 200, QUINCY, MA 02171

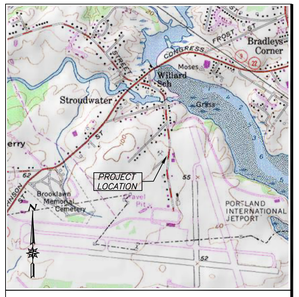
ACORN ENGINEERING, INC.
ACORN ENGINEERING, INC
70 FORT ROAD SOUTH PORTLAND, MAINE 04104
PO BOX 3237 (207) 775-2655

USE OF THESE PLANS WILL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS MADE TO THESE PLANS WITHOUT THE WRITTEN PERMISSION OF ACORN ENGINEERING, INC. SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

FILE:	1133_CIVIL
JN:	1133
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER

DRAWING NO



VICINITY MAP
N.T.S.

CAPPED REBAR
STI #2147, 3"AG

PAVED

N/F
TOYE REALTY HOLDINGS II, LLC
15976/327
210A-B-4
0 JETPORT BOULEVARD

N35°52'27"W 385.53'

WOODED

N/F
PINGREE 2000 REAL ESTATE HOLDINGS, LLC
28382/86
204-A-10, 210-B-39
1128 WESTBROOK STREET

N47°04'00"E 388.09'

LIMITS OF ICE AT TIME OF SURVEY

5/8" REBAR
4"BG

INV. 15"CPP = 74.29'
DMH RIM = 75.66'
INV. IN = 70.03'
INV. OUT = 69.61'

5/8" REBAR
B.S.B

ACCESS & UTILITY EASEMENT

R=383.00'
L=105.31'
S78°06'41"W
104.98'

JETPORT BOULEVARD

N07°03'01"W
60.35'

CAPPED REBAR
STI #2147, FL

S07°01'05"E
26.60'

N23°37'56"W
337.40'

APPROXIMATE LIMITS OF AIRPORT SURVEILLANCE RADAR (ASR) CRITICAL AREA

200.00'

INV. 12"RCP = 63.25'

DMH RIM = 69.78'
FULL OF WATER

DETENTION POND ICE COVERED AT TIME OF SURVEY

N18°48'29"E 177.84'

DRAINAGE AND DETENTION EASEMENT
SEE NOTE 6

DMH RIM=76.71'
WATER AT 69.4'
PIPE NOT VISIBLE

DMH RIM=73.08'
INV IN=67.74'

SUSPECTED LOCATION ONLY

DMH RIM = 69.83'
FULL OF WATER

INV. 24" CPP=54.45'

SMH RIM = 74.27'
8" PVC OUT = 65.42'

DMH RIM = 72.27'
FULL H20
CACO BAY TRAP

DMH RIM=72.93'
INV. OUT=68.04'

INV. 12" RCP = 67.73'
INV. 15" RCP = 67.67'

DMH RIM = 72.96'
INV IN = 67.40'
INV. OUT = 67.36'

S18°50'25"W
241.83'

S07°09'35"E 269.70'

INV. 12" RCP = 59.24'

CB RIM = 57.55'
CASCO BAY TRAP
WATER AT 53.45'

DMH RIM = 57.88'
INV. IN = 53.28'
INV. OUT = 53.18'

DMH RIM = 71.89'
INV. IN = 68.11'
INV. OUT = 68.01'

R=38.00'
L=28.77'
S64°17'45"W
29.09'

15" RCP

RIP RAP

DMH RIM = 67.74'
CONCRETE TOP BROKEN
H2O OVERFLOWING

WATERLINE LOCATION IS APPROXIMATE

CB RIM = 68.02'

5/8" REBAR
3"BG, B.S.B

S05°38'55"W
140.74'

5/8" REBAR
4"BG

CB RIM = 63.28'
CASCO BAY TRAP
WATER AT 50.0'

INV. 15"RCP = 62.50'

CB RIM = 69.93'
CASCO BAY TRAP
WATER AT 64.4'

DMH RIM = 70.49'
INV. OUT = 64.02'
INV. OUT = 63.93'

15" PVC

8" PVC

WESTBROOK STREET

GASLINE MARKINGS FOUND

58.60'

56.52'

12" PVC

88.27'

DMH RIM = 63.76'

SMH RIM = 72.71'
8" PVC IN = 63.04'
8" PVC OUT = 63.00

SMH RIM = 66.84'
8" PVC IN = 59.95'
8" PVC OUT = 59.91

LEGEND

●	#5 REBAR WITH PLASTIC CAP STAMPED #2028 SET APRIL 4, 2017
⊙	FOUND IRON PIPE (SIZE & TYPE AS NOTED)
⊖	FOUND PINCHED IRON PIPE
⊡	FOUND MONUMENT (SIZE & TYPE AS NOTED)
⊙	FOUND DRILL HOLE
⊕	FOUND IRON ROD
◒	FOUND CAPPED IRON ROD (NUMBER AS NOTED)
—▫—	SIGN
—○—	UTILITY POLE (NUMBER AS NOTED)
	GUY WIRE ANCHOR
	FIRE HYDRANT
	TREE
	SHRUB
	BOUNDARY LINE
	EASEMENT LINE
	EDGE OF PAVEMENT
	RIGHT-OF-WAY LINE
	ABUTTER LINE
	SETBACK LINE
	TREE LINE
OHU	OVERHEAD UTILITY
S	SEWER LINE
D	DRAIN LINE
W	WATER LINE
G	GAS LINE
N/F	NOW OR FORMERLY OWNED BY
1234/567	DEED BOOK AND PAGE (CCRD)
12-3-45	TAX MAP-BLOCK-LOT
(123.45)	PARENTHESIS DENOTE RECORD DATA

NOTES

1. THE BASIS OF BEARING FOR THIS SURVEY IS MAINE STATE GRID, WEST ZONE ACQUIRED BY GPS MEASURMENT. ELEVATIONS AND CONTOURS ARE REFERENCED TO NGVD1929.
2. DEED AND PLAN BOOK REFERENCES ARE TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
3. RECORD OWNERSHIP OF THE PARCEL SURVEYED CAN BE FOUND IN A DEED FROM THOMAS A. TOYE TO TOYE REALTY HOLDINGS, LLC DATED APRIL 29, 1999 AND RECORDED IN DEED BOOK 14717, PAGE 316.
4. THE PARCEL SURVEYED IS IDENTIFIED ON THE CITY OF PORTLAND TAX ASSESSOR'S MAP 207, BLOCK A, PARCEL 12 AND MAP 210A, BLOCK B, PARCEL 7.
5. REFERENCE IS MADE TO THE FOLLOWING PLANS:
   a. "STANDARD BOUNDARY SURVEY OF THOMAS A. TOYE PROPERTY, WESTBROOK STREET, PORTLAND, MAINE FOR TOYE REALTY HOLDINGS, LLC" BY SEBAGO TECHNICS, INC DATED NOVEMBER 27, 2000 AND RECORDED AT CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 201, PAGE 22.
   b. "PORTLAND INTERNATIONAL JETPORT, RECORDING PLAT" BY DUFRENE-HENRY, INC. LAST REVISED JUNE, 1987 AND RECORDED AT CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BBOK 160, PAGE 60.
6. EASEMENTS OF RECORD
   a. DRAINAGE AND DETENTION EASEMENT CONVEYED TO JOSEPH F. BOULOS ET. AL. BY DEED OF BCD AIRPORT PARTNERS DATED OCTOBER 2, 1988 AND RECORDED IN BOOK 8557, PAGE 130 AND DESCIBED AS EXHIBIT B.
   b. ACCESS AND UTILITY EASEMENT CONVEYED TO JOSEPH F. BOULOS ET. AL. BY DEED OF BCD AIRPORT PARTNERS DATED OCTOBER 2, 1988 AND RECORDED IN BOOK 8557, PAGE 130 AND DESCIBED AS EXHIBIT C.
   c. AIR RIGHTS AND EASEMENTS THAT EXIST OVER THE SURVEYED PROPERTY INCLUDING AN ASR CRITICAL AREA DESIGNATION AS IS SHOWN ON PLAN REFERENCE 5.b.
7. THE SURVEYED PARCEL CONTAINS 175,560 SQUARE FEET OR 4.03 ACRES.
8. THE UTILITIES SHOWN ON THIS PLAN WERE FROM FIELD OBSERVATION ONLY. THERE MAY BE OTHER UTILITIES EXISTING THAT ARE NOT SHOWN. CONTACT DIG-SAFE (888)DIG-SAFE PRIOR TO ANY EXCAVATION WORK

Revisions:	By:	Date:	Change:

PROJECT: 202003	DRAWING NAME: 1060 WSBK ST.DWG		
DATE: FEBRUARY 1, 2020	SCALE: 1"=30'	FB 14 YES	E. FB YES
FIELDED BY: J.A.M. & J.B.P.	FIELD DATE: JANUARY 2020	DRAWN BY:	J.A.M.

Drawing Name and Location:
BOUNDARY/TOPOGRAPHIC SURVEY
1060 WESTBROOK STREET, PORTLAND, MAINE

Owner:
TOYE REALTY HOLDINGS, LLC
PO BOX 6285, CAPE ELIZABETH, MAINE 04107

Prepared For:
ACORN ENGINEERING, INC.
65 HANOVER STREET, PORTLAND, MAINE 04101

SURVEYING LAND PLANNING
Spurwink Surveying
INCORPORATED
182 SPURWINK ROAD, SCARBOROUGH, MAINE
tel 207.799.2654 cell 207.321.8966 e-mail spurwinksurveying@gmail.com

0 30' 60' 120'

STAMP AND SIGNATURE

James A. Mullen MAY 4, 2020
JAMES A. MULLEN DATE
MAINE P.L.S. No. 2028

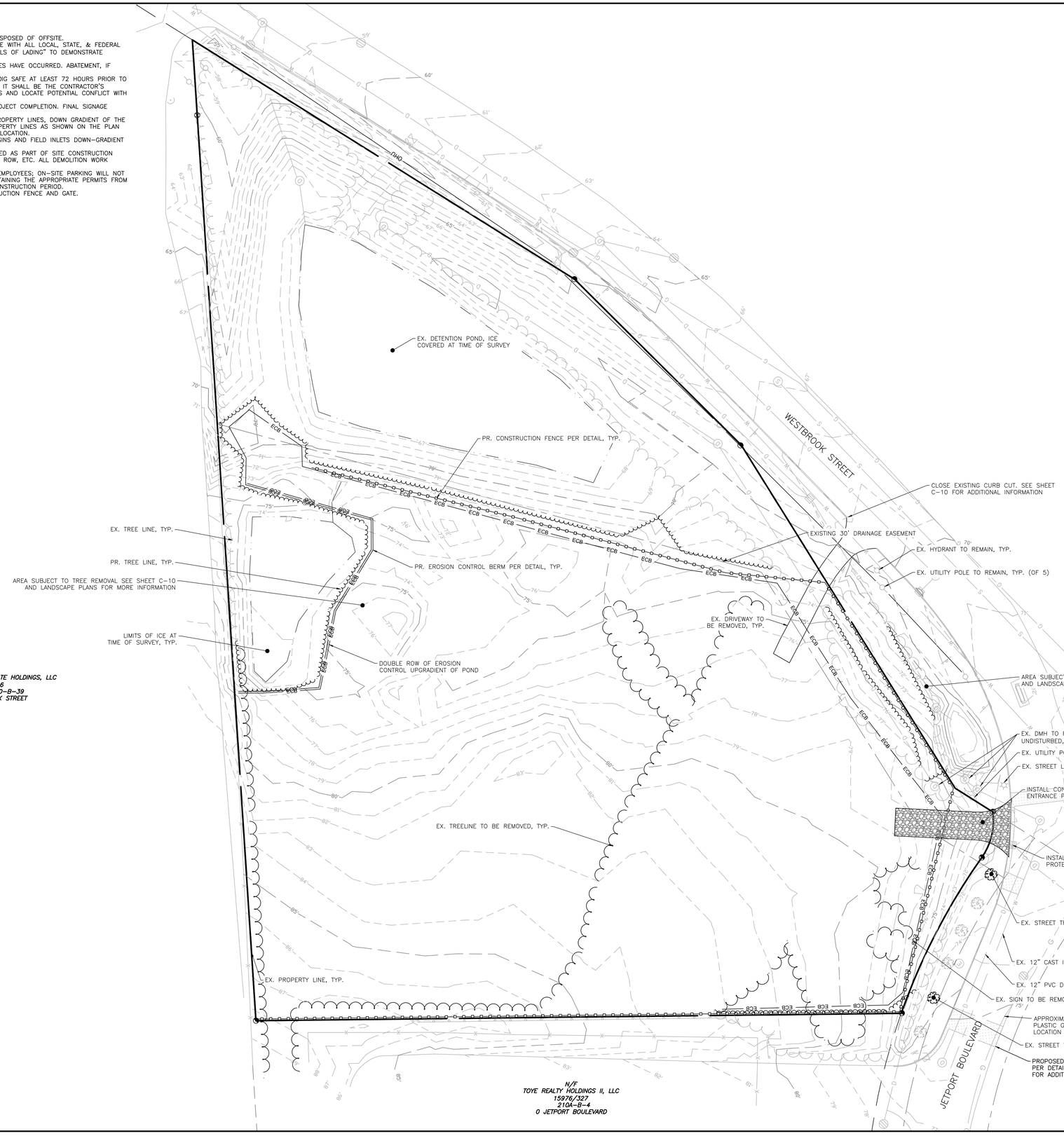
STATE OF MAINE · JAMES A. MULLEN PLS 2028 · PROFESSIONAL LAND SURVEYOR

IF THIS PLAN DOES NOT CONTAIN AN EMBOSSED SEAL, IT IS NOT AN ORIGINAL AND MAY BE VOID.

EMBOSSED SEAL ABOVE

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.



PERMITING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
ATS LETTER	PFH 1/26/2024
CSS	PFH 2/9/2024
MAJOR SITE PLAN	PFH 2/23/2024

DRAWING NAME: **CONSTRUCTION MANAGEMENT PLAN**

PROJECT NAME: HYATT STUDIOS HOTEL DEVELOPMENT
1060 WESTBROOK STREET, PORTLAND, ME 04102

CLIENT: GIRI HOTEL MANAGEMENT
225 WEST SQUANTUM STREET, SUITE 200, QUINCY, MA 02171

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS MADE BY ANYONE OTHER THAN ACORN ENGINEERING, INC. SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
70 FORE RIVER PARKWAY, SUITE 104
PO BOX 3477, PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1133_CIVIL
JN:	1133
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER
2/23/24

DRAWING NO.
C-03

GENERAL NOTES:

1. ALL 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.

SPACE AND BULK STANDARDS		
ZONE: A–B	REQUIRED	PROPOSED
MIN. LOT AREA	20,000 SF	175,560 SF
MIN. LOT WIDTH	50 FT	
MIN. STREET FRONTAGE	50 FT	813 FT
STRUCTURE SETBACKS		
FRONT (ALONG WESTBROOK STREET ONLY)	20 FT	132.30 FT
SIDE	NONE	N/A
REAR	NONE	N/A
MAXIMUM HEIGHT	45 FT*	37.72 FT
MAXIMUM IMPERVIOUS SURFACE RATIO	70%	38.77%
MINIMUM OFF–STREET PARKING	1 SPACE PER 4 ROOMS W/ 120 ROOMS = 30 SPACES	105

SPACE AND BULK NOTES:
* PER FFA BUILDING ELEVATION IS RESTRICTED TO 52 FT ABOVE GROUND LEVEL & 126 FT ABOVE THE MEAN SEA LEVEL

PARKING SUMMARY				
	UNITS	SPACES REQUIRED	PROPOSED	PROPOSED EV
HOTEL	120	1 SPACE PER 4 ROOMS = 30 SPACES	100	20
ADA (8'X18')	–	–	4	–
ADA (11'X20')	–	–	1	1
TOTAL SPACES	–	30	105	21
BICYCLE PARKING		2 BICYCLE SPACES PER 10 VEHICLES PARKING SPACES FOR THE FIRST 100 VEHICLE SPACES REQUIRED = 6 SPACES	6	

* IN ACCORDANCE WITH SECTION 14.6.1 OF THE CITY OF PORTLAND LAND USE CODE, AND SECTION 1.14 OF THE PORTLAND TECHNICAL MANUAL, NEW PARKING LOTS WITH FIVE OR MORE SPACES SHALL INCLUDE ENERGIZED ELECTRICAL OUTLETS OR INSTALLED CHARGERS CAPABLE OF PROVIDING LEVEL 2 ELECTRIC VEHICLE CHARGING OR HIGHER 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.

PLANT SCHEDULE				
ID	BOTANICAL NAME	COMMON NAME	QTY	SIZE
TREES				
OA	OXYDENDRUM ARBOREUM	SOURWOOD	7	2" CAL
CM	CRATAEGUS MONOGYNA	HAWTHORN	18	2" CAL
SHRUBS				
CS	CORNUS SERICEA	RED TWIG DOGWOOD	19	3 GAL.
CA	CLETHRA ALNIFOLIA	RUBY SPICE SUMMERSWEET	18	3 GAL.
CR	CORNUS RACEMOSA	GRAY DOGWOOD	22	3 GAL.
PERENNIALS				
NL	NARROW–LEAVED BLUE–EYED GRASS	SISYRINCHIUM ANGUSTIFOLIUM	16	1 GAL.
WS	WOODLAND STONECROP	SEDUM TERNATUM	16	1 GAL.
SG	PANICUM SWITCH GRASS	VIRGATUM "CHEYENNE SKY"	17	1 GAL

EX. PROPERTY LINE, TYP.
EX. DETENTION POND, ICE COVERED AT TIME OF SURVEY
EX. UTILITY POLE TO REMAIN, TYP. (OF 7)
WESTBROOK STREET
CLOSE EXISTING CURB CUT WITH NEW VERTICAL GRANITE CURB PER DETAIL
EX. TREE LINE, TYP.
PR. TREE LINE, TYP.
VUSF #1 SEE SHEET C–30 FOR ADDITIONAL INFORMATION
EXISTING 30' DRAINAGE EASEMENT
PR. VERTICAL GRANITE CURB PER DETAIL, TYP.
PROPOSED SNOW STORAGE, TYP.
20' STRUCTURE SETBACK ON WESTBROOK STREET
EX. "NO PARKING" SIGN TO REMAIN, TYP. (OF 4)
EX. LIMITS OF RIPRAP, TYP.
EX. CONCRETE ISLAND AND "AUTHORIZED VEHICLES ONLY" SIGNAGE TO REMAIN
LIMITS OF ICE AT TIME OF SURVEY, TYP.
N/F
PINGREE 2000 REAL ESTATE HOLDINGS, LLC
28382/86
204–A–10, 210–B–39
1128 WESTBROOK STREET
24 SPACES
216 LF OF WOODEN GUARDRAIL, TYP. PER DETAIL
PR. PAVEMENT, TYP.
DUAL EV CHARGING STATIONS
6 SPACES
9 SPACES
32 SPACES
PR. LANDSCAPED ISLAND MOUNDED TO DRAIN, TYP.
PROPOSED HYDRANT LOCATION, SEE SHEET C–20
DETECTABLE WARNING PANEL, TYP. PER DETAIL
PROPOSED CROSSWALK, TYP. PER DETAIL.
APPROX LOCATION OF EXISTING CROSSWALK
APPROVED BUILDING LIMIT ENVELOPE PER FFA
1 DUAL EV CHARGING STATION
1 BICYCLE RACK, TYP. PER DETAIL
11 SPACES
PROPOSED CONCRETE PAD FOR TRANSFORMER, TYP. PER DETAIL. SEE SHEET C–20 FOR ADDITIONAL INFORMATION
HOLD MINIMUM 6" FOUNDATION REVEAL ON PERIMETER OF BUILDING. COORDINATE WITH ARCHITECT AND STRUCTURAL ENGINEER
PR. 167 LF CONCRETE RETAINING WALL WITH RAILING, TYP. RETAINING WALL AND UNDERDRAIN/WEEP HOLES TO BE DESIGNED BY OTHERS. (5'± TALL)
PR. WOODEN FENCE PER DETAIL, TYP.
PR. HOTEL BUILDING 19,889 SF FOOTPRINT
2 BICYCLE RACKS, TYP. PER DETAIL
(22) CR
(16) NL
(16) WS
(17) SG
(9) CS
(5) 16 LF SECTIONS OF WOODEN GUARDRAIL TO BE INSTALLED IN BETWEEN EV CHARGING STATIONS
DUAL EV CHARGING STATIONS
23 SPACES
VUSF #2 SEE SHEET C–30 FOR ADDITIONAL INFORMATION
PR. STOP SIGN AND STOP BAR PER DETAIL, TYP. (OF 3) TO CREATE 4–WAY STOP INTERSECTION
WESTBROOK STREET
EX. EDGE OF PAVEMENT, TYP.
APPROXIMATE LOCATION OF EMBASSY SUITES ENTRANCE DRIVE
EX. VERTICAL GRANITE CURB, TYP.
PROPOSED BITUMINOUS SIDEWALK, TYP. PER DETAIL.
EX STREET TREE TO REMAIN, TYP. OF 4. PROVIDE TREE PROTECTION PER DETAIL
EX "30 MPH" SIGNAGE TO BE RELOCATED PRIOR TO SIDEWALK CONSTRUCTION
PR. ADA ACCESSIBLE WALKWAY WITH HANDRAILS FOR 65 LF
PR. 24'X13' DUMPSTER AREA, PER DETAIL
RESET EXISTING GRANITE CURB. SEE SHEET C–20 AND C–30 FOR ADDITIONAL INFORMATION
JETPORT BOULEVARD
PROPOSED SIDEWALK CONNECTION. SEE SHEET C–30 FOR ADDITIONAL INFORMATION
RELOCATE EXISTING LIGHT POLE AND INSTALL TREE PROTECTION AS NECESSARY FOR SIDEWALK CONNECTION.
(1) OA
(3) CS
(2) OA
(2) CS
(1) OA
(18) CM
(18) CA
18" GRAVEL DRIP EDGE, TYP. PER DETAIL
PR. OUTDOOR SEATING AREA
EX. FENCE TO REMAIN, TYP.
EX. GUARDRAIL TO REMAIN, TYP.
N/F
TOYE REALTY HOLDINGS II, LLC
15976/327
210A–B–4
0 JETPORT BOULEVARD

30 0 30 60
SCALE: 1:30

PERMITING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
ATS LETTER	PFH 1/26/2024
CSS	PFH 2/9/2024
MAJOR SITE PLAN	PFH 2/23/2024
COMMENT RESPONSE	PFH 4/16/2024

SITE PLAN

DRAWING NAME:
PROJECT NAME: HYATT STUDIOS HOTEL DEVELOPMENT
1060 WESTBROOK STREET, PORTLAND, ME 04102
CLIENT: GIRI PORTLAND WESTBROOK INC.
225 WEST SQUANTUM STREET, SUITE 200, QUINCY, MA 02171

ACORN ENGINEERING, INC.
ENGINEERING, INC.
ACORN ENGINEERING, INC.
70 FORE RIVER PARKWAY, SUITE 104
PO BOX 3207 PORTLAND, ME 04104
(207) 775–2655

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND ANY UNAUTHORIZED USE OF THESE PLANS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

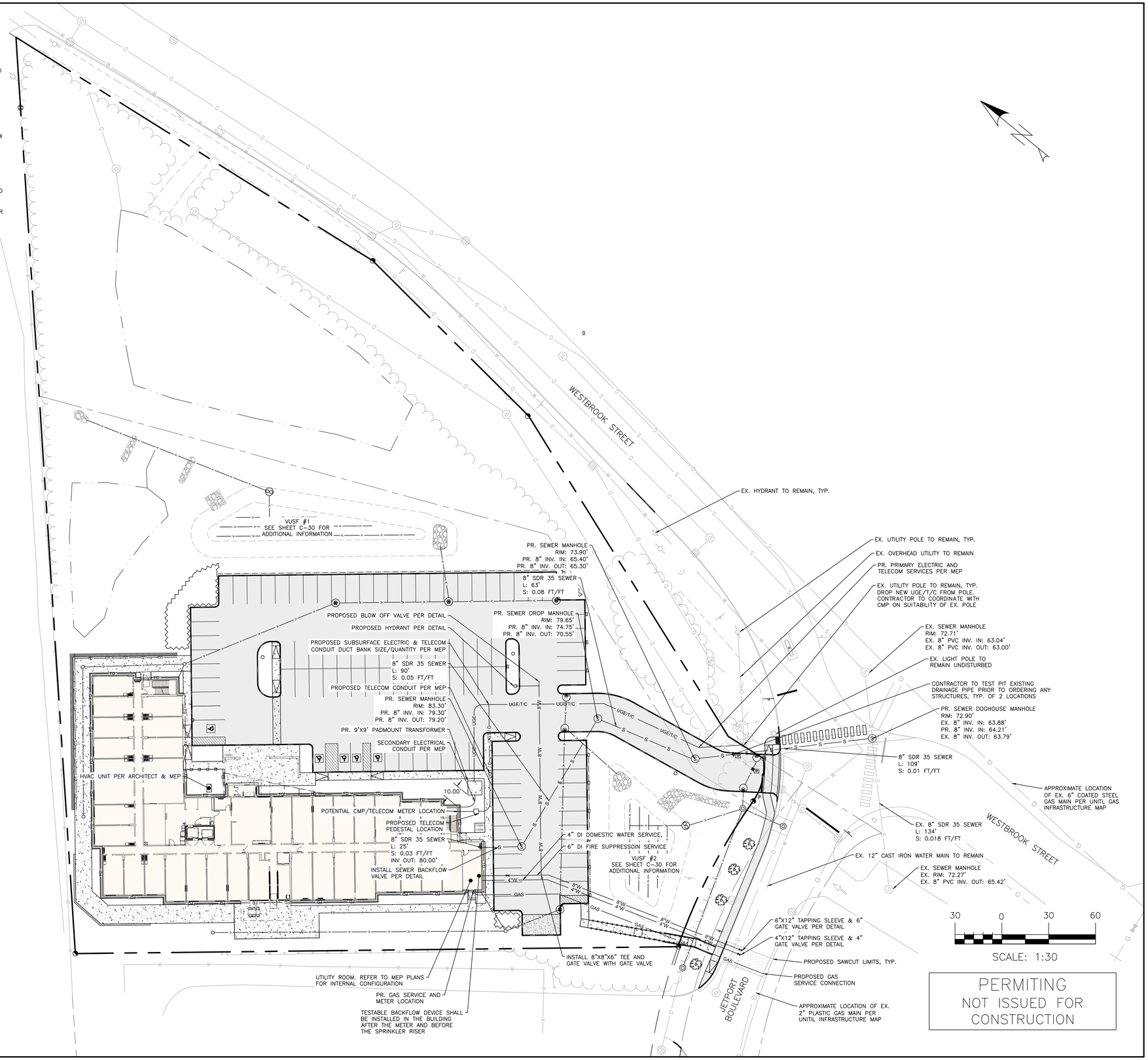
FILE:	1133_CIVIL
JN:	1133
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER

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 CONSOLIDATED COMMUNICATIONS AND CHARTER PRIOR TO CONSTRUCTION. CONTRACTOR TO COORDINATE INSTALLATION OF UNDERGROUND UTILITIES WITH ALL UTILITY COMPANIES INVOLVED.



PERMITING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
ATS LETTER	PFH 1/26/2024
CSS	PFH 2/9/2024
MAJOR SITE PLAN	PFH 2/23/2024
COMMENT RESPONSE	PFH 4/16/2024

DRAWING NAME: **UTILITY PLAN**

PROJECT NAME: HYATT STUDIOS HOTEL DEVELOPMENT
1060 WESTBROOK STREET, PORTLAND, ME 04102

CLIENT: GIRI PORTLAND WESTBROOK INC.
225 WEST SQUANTUM STREET, SUITE 200, QUINCY, MA 02171

THESE PLANS, AND NOTES, MODIFIED AND/OR ALTERATIONS THEREON SHALL NOT BE USED FOR ANY PURPOSE WITHOUT PERMISSION FROM ACORN ENGINEERING, INC. AND SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
ENGINEERING, INC.
ACORN ENGINEERING, INC.
70 ALLEN AVENUE, SUITE 4
PO BOX 3477, PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1133_CIVIL
JN:	1133
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER

DRAWING NO.
C-20

BUILDING ELEVATION

1: 84.95'
2: 84.25'
3: 85.00'
4: 84.25'
5: 83.95'
6: 86.25'

AVERAGE GRADE: 84.78'
FFE: 85.00'
TOP OF BUILDING ELEVATION: 122.50'

BUILDING HEIGHT: 37.72'
MAX ALLOWABLE HEIGHT: 45'

INSTALL STONE CHECK DAM PER DETAIL, TYP.
12" SDR 35 SD L: 123' S: 0.006 FT/FT
PR. OCS (5'ø) RIM: 77.00' (BEEHIVE GRATE ON OUTLET SIDE OF WEIR WALL PER DETAIL) 4" INV. IN: 71.40' 1" ORIFICE: 71.35' 6" ORIFICE: 75.10' TOP WEIR WALL: 75.83' 12" INV. OUT: 71.30'
12" OUTLET 70.50'
PR. CB #8 RIM: 81.50' 12" INV. IN: 77.39' 12" INV. OUT: 77.29'
12" SDR 35 SD L: 67' S: 0.005 FT/FT
12" OUTLET 76.70'
PR. CB #7 RIM: 81.50' 12" INV. IN: 76.95' 12" INV. OUT: 76.85'
12" SDR 35 SD L: 64' S: 0.005 FT/FT
EX. DRAINAGE MANHOLE TO REMAIN RIM: 69.74'
WESTBROOK STREET
TC: MATCH EX. BC: MATCH EX.
MATCH EX. CURB REVEAL
PR. CB #2 RIM: 81.05' 12" INV. OUT: 76.90'
TC: MATCH EX. BC: MATCH EX.
12" SDR 35 SD L: 16' S: 0.005 FT/FT
TC: 82.25' BC: 81.75'
PR. CB #1 RIM: 81.05' (2) 12" INV. IN: 76.80' 12" INV. OUT: 76.70'
PR. 76.22'
EX. DRAINAGE MANHOLE RIM: 76.71'
2% CROSS SLOPE WITHIN ACCESS AISLE
12" PVC OUTLET INV. 67.73'
EX. 24" STORM DRAIN OUTLET UNKNOWN
EX. DRAINAGE MANHOLE TO REMAIN RIM: 73.06' INV. IN: 67.74'
EX. DRAINAGE MANHOLE TO REMAIN RIM: 72.92' INV. OUT: 68.28'
PR. CB #5 RIM: 71.90' 8" INV. OUT: 68.96'
TC: MATCH EX. BC: MATCH EX. 71.48'
TIPDOWN: EX. 71.38'±
APPROXIMATE LOCATION OF EX. 24" STORM DRAIN PER RECORD DRAWING BY DELUCA–HOFFMAN ASSOCIATES, INC. (1998) 24" INV AT THIS LOCATION APPROX: 66.50' (CONTRACTOR TO TEST PIT THIS LOCATION PRIOR TO ORDERING ANY STRUCTURES)
TIPDOWN: EX. 71.40'±
71.98' (FLUSH CURB)
EX. 71.45'
8" SDR 35 SD L: 16' S: 0.005 FT/FT
PR. CB #4 RIM: 72.00' 8" INV. IN: 68.88' 12" INV. OUT: 68.78'
PR. 72.24' (GRADE BREAK, TYP.)
MATCH EX. 71.70'±
EX. DRAINAGE MANHOLE TO REMAIN RIM: 71.89' INV. IN: 68.11' INV. OUT: 68.01'
72.58'
72.50' (FLUSH CURB)
EX. CATCH BASIN TO REMAIN EX. 72.00'
EX. DRAINAGE MANHOLE TO REMAIN, TYP. RIM: 72.27'
APPROXIMATE LOCATION OF EX. 12" STORM DRAIN PER RECORD DRAWING BY DELUCA–HOFFMAN ASSOCIATES, INC. (1998)
EX. CATCH BASIN TO REMAIN, TYP. TC: MATCH EX. INV. IN: 67.00'± BC: MATCH EX. INV. OUT: 66.62'±
PR. DOGHOUSE DMH #1, TYP. PER DETAIL RIM: 72.55' PR. 12" INV: 69.00' EX 12" INV: 68.50' EX 12" INV OUT: 68.40' PROVIDE SUMP PER DETAIL
12" SDR 35 SD L: 24' S: 0.005 FT/FT
PR. CATCH BASIN WITH BEEHIVE GRATE PER DETAIL RIM: 72.50' (2) 12" INV IN: 69.22' 15" INV IN: 69.22' 18" INV OUT: 69.12'
EX. 12" PVC DRAINAGE MAIN TO REMAIN
INSTALL 6" OR SMALLER STONE WITHIN SWALE, TYP.
12" SDR 35 SD L: 30' S: 0.067 FT/FT
PR. OCS (5'ø) RIM: 77.15'(BEEHIVE GRATE ON OUTLET SIDE OF WEIR WALL PER DETAIL) 4" INV. IN: 71.55' 1" ORIFICE: 71.50' 4" ORIFICE: 75.35' WEIR WALL: 75.85' 12" INV. OUT: 71.45'
EX. DRAINAGE MANHOLE TO REMAIN EX. RIM: 75.66' EX. INV. IN: 70.03' EX. INV. OUT: 69.61'
WESTBROOK STREET
PR. 79.60'
72.05'
PR. 81.70'
TC: 81.60' BC: 81.10'
TC: 82.00' BC: 81.50'
TC: 83.00' BC: 82.50'
12" OUTLET 76.50'
EMERGENCY SPILLWAY: 77.40'
GRADE BREAK, TYP.
TC: 84.10' BC: 83.60'
VUSF #2
TIPDOWN: 81.90'
TIPDOWN: 81.82'
PR. 81.60'
PR. 81.73'
PR. 75.80'±
PR. 76.45'
PR. 76.58'
PR. 79.15'
PR. 79.02'
TC: 82.25' BC: 81.75'
TC: 82.37' BC: 81.87'
PR. 75.86'
PR. CATCH BASIN WITH BEEHIVE GRATE PER DETAIL RIM: 73.00' 15" INV OUT: 69.75'
TIPDOWN TO EX GRADE: 75.76'
TC: EX. 75.79' BC: EX. 75.26'
15" CPP OUTLET INV. 73.21'
TC: MATCH EX. BC: MATCH EX.
TIPDOWN TO EX GRADE: 77.22'
TIPDOWN TO EX GRADE: 77.25'±
TIE INTO EXISTING CONCRETE LANDING
TIPDOWN TO EX GRADE: 77.35'±
TIPDOWN TO EX GRADE: 75.35'±
TC: 77.63' BC: EX. 77.30'±
UPPORT BOULEVARD
BW/TW: 84.00'±
RET WALL UD INV: 77.67'
PR. FIELD INLET RIM: 83.95' 12" INV. IN: 78.00' 6" RD/FD INLET: 78.00 12" INV. OUT: 77.90'
INSTALL BACKFLOW PREVENTER PER DETAIL
WALL HIGH POINT: BW: 77.00'± TW: 84.75'±
4" SDR 35 UD L: 66' S: 0.0025 FT/FT
12" SDR 35 SD L: 64' S: 0.005 FT/FT
RET WALL UD INV OUT: 77.50'
BW: 78.50' TW: 84.00'
PR. FIELD INLET RIM: 83.75' 12" INV. IN: 78.42' 12" INV. OUT: 78.32'
12" SDR 35 SD L: 94' S: 0.005 FT/FT
4" SDR 35 UD L: 97' S: 0.0025 FT/FT
HOLD MINIMUM 6" FOUNDATION REVEAL ON PERIMETER OF BUILDING. COORDINATE WITH ARCHITECT AND STRUCTURAL ENGINEER
PR. 167 LF CONCRETE RETAINING WALL WITH RAILING, TYP. RETAINING WALL AND UNDERDRAIN/WEEP HOLES TO BE DESIGNED BY OTHERS. (5'± TALL)
TW/BW: 84.85'
RET WALL UD INV: 77.75'
PR. FIELD INLET RIM: 84.92' 12" INV. OUT: 78.90'
TIPDOWN: 85.70'
PR: 86.25'
TC: 86.50' BC: 86.00
TC: 86.50' BC: 86.00
TIPDOWN: 85.70'
EMERGENCY SPILLWAY: 77.35'
VUSF #1
TC: 82.90' BC: 82.40'
12" SDR 35 SD L: 101' S: 0.005 FT/FT
PR. 81.85'
TC: 82.00' BC: 81.50'
TC: 83.20' BC: 82.70'
TIPDOWN: 82.30'
TIPDOWN: 82.25'
PR. CB #6 RIM: 81.25' 12" INV. OUT: 77.29'
TC: 82.00' BC: 81.50'
TC: 82.50' BC: 82.00'
TC: 83.45' BC: 82.95'
TC: 83.00' BC: 82.50'
TC: 84.78' BC: 84.28'
TIPDOWN: 83.18'
FLUSH CURB 84.53'
TIPDOWN: 84.20'
PR. 84.23'
PR: 84.95'
PR: 85.00'
PR: 84.25'
FOUNDATION DRAIN/ROOF DRAIN CONNECTION
TIPDOWN: 84.45'
TIPDOWN: 84.53'
TC: 85.03' BC: 84.53'
TIPDOWN: 84.53'
PR. 82.75'
TIPDOWN: 82.00'
TIPDOWN: 82.07'
TC: 82.77' BC: 82.27'
PR. 83.45'
TC: 84.70' BC: 84.20'
PR. 83.90'
TC: 83.50' BC: 83.00'
PR: 85.00'
PR: 85.00'
TIPDOWN: 84.05'
TIPDOWN: 83.70'
TC: 84.12' BC: 83.62'
PR: 84.25'
12" SDR 35 SD L: 111' S: 0.005 FT/FT
PR: 85.00'
PR: 83.95'
MECHANICAL ROOM FFE 85.00'. (2) 6" RISERS PER ARCHITECT
FFE: 85.00'
PR: 85.00'
12" SDR 35 SD L: 186' S: 0.005 FT/FT
FOUNDATION DRAIN/ROOF DRAIN CONNECTION. COORDINATE FINAL ROOF DRAIN PIPE SIZE WITH MEP
TC: 83.34' BC: 82.84'
INSTALL BACKFLOW PREVENTER PER DETAIL
PR. FIELD INLET WITH BEEHIVE GRATE RIM: 84.75' 12" INV. IN: 78.76' 12" INV. OUT: 78.66'
PR. FIELD INLET WITH BEEHIVE GRATE RIM: 82.75' 12" INV. IN: 77.73' 6" RD/FD INLET: 77.73 12" INV. OUT: 77.63'
TC: 82.61' BC: 82.11'
12" SDR 35 SD L: 36' S: 0.005 FT/FT
PR. CB #3 RIM: 81.70' 12" INV. IN: 77.45' 12" INV. OUT: 77.35'

30 0 30 60
SCALE: 1:30

PERMITING
NOT ISSUED FOR CONSTRUCTION

DRAWING NO.
C-30

ISSUED FOR	BY DATE
ATS LETTER	PFH 1/26/2024
CSS	PFH 2/9/2024
MAJOR SITE PLAN	PFH 2/23/2024
COMMENT RESPONSE	PFH 4/16/2024

DRAWING NAME: GRADING & DRAINAGE PLAN
PROJECT NAME: HYATT STUDIOS HOTEL DEVELOPMENT
1060 WESTBROOK STREET, PORTLAND, ME 04102
CLIENT: GIRI PORTLAND WESTBROOK INC.
225 WEST SQUANTUM STREET, SUITE 200, QUINCY, MA 02171

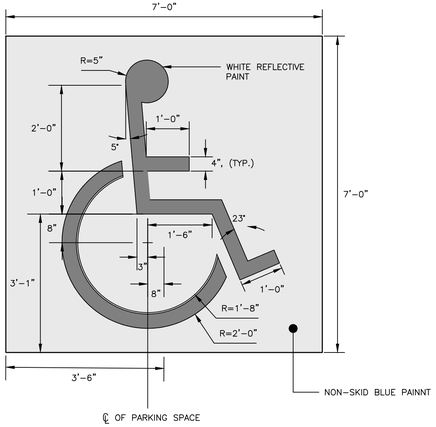
ACORN ENGINEERING, INC.

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION OF ACORN ENGINEERING, INC. AND ANY UNAUTHORIZED MODIFICATIONS OR REUSE SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
70 JOHN ROAD, SUITE 2 CAPE ELIZABETH, MAINE 04107
PO BOX 3287 PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1133_CIVIL
JN:	1133
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

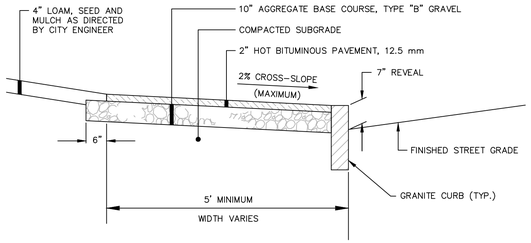
STATE OF MAINE PETER F. HEIL 15318 LICENSED PROFESSIONAL ENGINEER



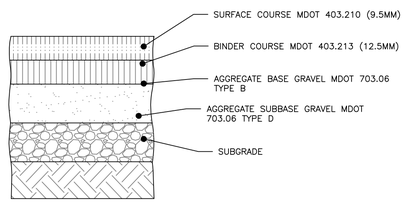
INTERNATIONAL BARRIER FREE SYMBOL
NOT TO SCALE

NOTE:

COMPACT SUBGRADE TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557



BITUMINOUS SIDEWALK
NOT TO SCALE

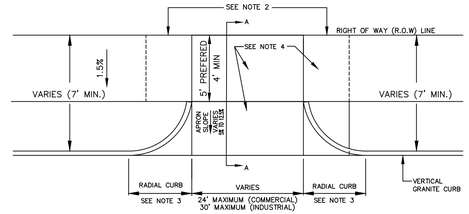


NOTES:

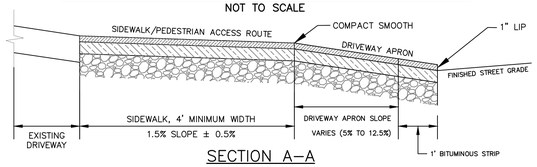
1. COMPACT SUBGRADE TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557
2. SURFACE AND AGGREGATE MATERIALS SHALL MEET THE CITY OF PORTLAND STANDARDS IN ADDITION TO MDOT STANDARDS.

THICKNESS OF LAYERS	
STANDARD	LAYERS
1-1/2"	SURFACE COURSE MDOT 403.210 (9.5mm)
2"	BINDER COURSE MDOT 403.213 (12.5mm)
3"	AGGREGATE BASE GRAVEL MDOT 703.06 TYPE A
15"	AGGREGATE SUBBASE GRAVEL MDOT 703.06 TYPE D

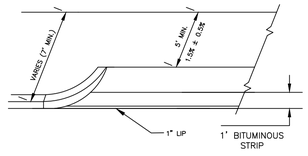
PRIVATE PAVEMENT PROFILE
NOT TO SCALE



STANDARD COMMERCIAL DRIVEWAY APRON LAYOUT
NOT TO SCALE

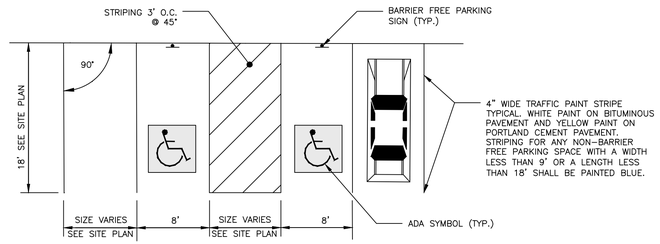


SECTION A-A
NOT TO SCALE

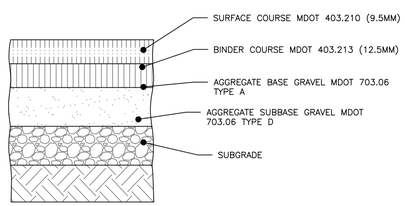


NOTES:

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. DRIVEWAY CURB RADIUS SHALL NOT BE LARGER THAN REQUIRED BY THE SITE'S DESIGN VEHICLE.
4. ALL MATERIALS IN ROW TO COMPLY WITH CITY'S SIDEWALK & DRIVEWAY MATERIAL POLICY. BITUMINOUS IN DRIVEWAY APRONS, WHERE APPLICABLE.



PARKING SPACE DIMENSIONS
NOT TO SCALE

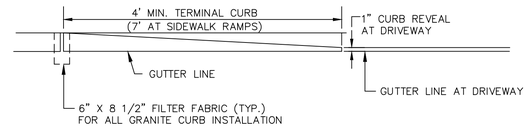


NOTES:

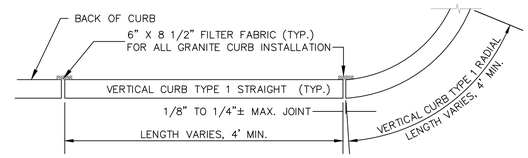
1. COMPACT SUBGRADE TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557
2. SURFACE AND AGGREGATE MATERIALS SHALL MEET THE CITY OF PORTLAND STANDARDS IN ADDITION TO MDOT STANDARDS.

THICKNESS OF LAYERS	
STANDARD	LAYERS
1-1/2"	SURFACE COURSE MDOT 403.210 (9.5mm)
2"	BINDER COURSE MDOT 403.213 (12.5mm)
3"	AGGREGATE BASE GRAVEL MDOT 703.06 TYPE A
15"	AGGREGATE SUBBASE GRAVEL MDOT 703.06 TYPE D

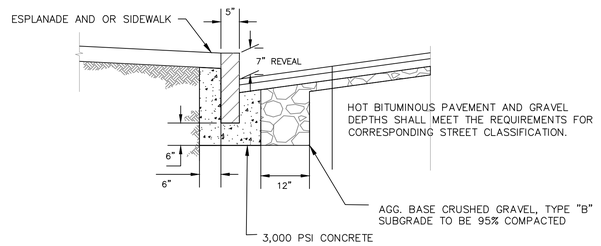
CITY OF PORTLAND LOCAL STREET BITUMINOUS PAVEMENT PROFILE
NOT TO SCALE



TERMINAL CURB PROFILE



VERTICAL GRANITE CURB PLAN VIEW

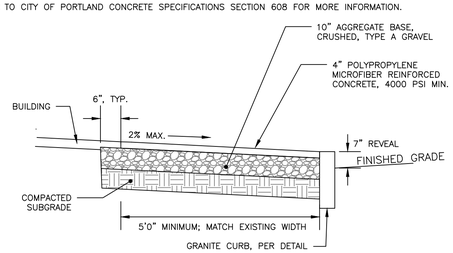


VERTICAL GRANITE CURB CROSS SECTION

NOTES:
1. INDIVIDUAL PIECES OF CURB SHORTER THAN 4 L.F. ARE NOT ALLOWED, WITH THE EXCEPTION OF RADIAL CURB.
2. 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 CURB.
3. CURBING SHALL BE SET IN A 6-INCH BED OF POURED IN PLACE 3,000 PSI CONCRETE MIX.
4. WOODEN SHIMS MAY BE USED TO SET CURB.

VERTICAL GRANITE CURB
NOT TO SCALE

1. AT A MINIMUM, TESTING SHALL CONSIST OF ENTRAINED AIR AND SLUMP TESTS ON SITE PRIOR TO POURING THE SIDEWALKS. ENTRAINED AIR TESTS SHALL BE DONE IN ACCORDANCE WITH AASHTO T152. TEST FIRST TWO LOADS AND EVERY THIRD LOAD THEREAFTER PROVIDED CONSISTENT RESULTS ARE ACHIEVED.
2. IF THE CONTRACTOR ELECTS TO USE WELDED WIRE FABRIC, THE FABRIC SHALL BE PLACED 2 INCHES ABOVE THE CRUSHED GRAVEL, AND 2 INCHES FROM ALL FINISHED EDGES, EXPANSION JOINTS AND CURBS. ALL FABRIC JOINTS SHALL BE OVERLAPPED A MINIMUM OF 1 FOOT AND BE PROPERLY TIED. IF THE CONTRACTOR ELECTS TO USE REBAR, ONLY 4-GAUGE WILL BE ACCEPTABLE. IF THE CONTRACTOR ELECTS TO USE A PRE-MIXED FIBER MESH, A SPECIFICATION SHEET MUST BE SUBMITTED AND PRE-APPROVED BY THE ENGINEER PRIOR TO ITS APPLICATION.
3. SLABS SHALL BE PLACED ALTERNATELY IN LENGTHS NOT TO EXCEED 30 FEET OR AS DIRECTED AND SHALL BE SEPARATED BY AN EXPANSION JOINT OF PREFORMED EXPANSION FILLER ½ INCH IN THICKNESS.
4. WHEN CONSTRUCTED ADJACENT TO A BUILDING, RETAINING WALL OR OTHER FIXED STRUCTURE, A ½ INCH THICK PREFORMED JOINT FILLER SHALL BE USED BETWEEN THE SLAB AND THE STRUCTURE.
5. THE SIDEWALK SURFACE SHALL BE SCORED INTO BLOCK UNITS NO GREATER THAN 40 SQUARE FEET AS DIRECTED. THE DEPTH OF THE SCORING SHALL BE AT LEAST ONE QUARTER OF THE THICKNESS OF THE SLAB.
6. ANY MATCHING INTO EXISTING SIDEWALKS SHALL BE DONE SO WITH A CLEAN VERTICAL FACE CONNECTION.
7. THE SURFACE SHALL BE FINISHED TO PRODUCE A BROOMLIKE "BRUSHED" PATTERN. NO PLASTERING OF THE SURFACE WITH MORTAR WILL BE PERMITTED. THE FINISH SHALL RESULT IN A SURFACE OF UNIFORM TEXTURE AND COLOR. ALL OUTSIDE EDGES OF THE SLAB AND ALL JOINTS SHALL BE ROUNDED WITH A ¼ INCH RADIUS EDGING TOOL.
8. CONCRETE SHALL BE CURED FOR 72 HOURS. CURING SHALL BE BY MEANS OF THOMPSON'S WATER SEAL AS MANUFACTURED BY E.A. THOMPSON CO., INC. OF MEMPHIS, TENNESSEE, BOILED LINSEED OIL, WHITE PIGMENTED CURING COMPOUND, OR BY OTHER APPROVED METHODS. CONCRETE SIDEWALK TO BE SEALED WITH CONSOLIDECK SALTGUARD WB OR APPROVED EQUAL 28 DAYS AFTER PLACEMENT. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR APPLICATION.
9. GENERAL CONTRACTOR TO COLLECT DELIVERY SLIPS AND TRANSFER TO THE OWNER.
10. REFER TO CITY OF PORTLAND CONCRETE SPECIFICATIONS SECTION 608 FOR MORE INFORMATION.



REINFORCED CONCRETE SIDEWALK
NOT TO SCALE

PERMITING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
ATS LETTER	PFH 1/26/2024
CSS	PFH 2/9/2024
MAJOR SITE PLAN	PFH 2/23/2024

DRAWING NAME: **SITE DETAILS - 1**

PROJECT NAME: HYATT STUDIOS HOTEL DEVELOPMENT
1060 WESTBROOK STREET, PORTLAND, ME 04102

CLIENT: GIRI HOTEL MANAGEMENT
225 WEST SQUANTUM STREET, SUITE 200, QUINCY, MA 02171

ACORN ENGINEERING, INC.
ENGINEERING, INC.
PO BOX 4593, PORTLAND, MAINE 04104
(207) 775-2655

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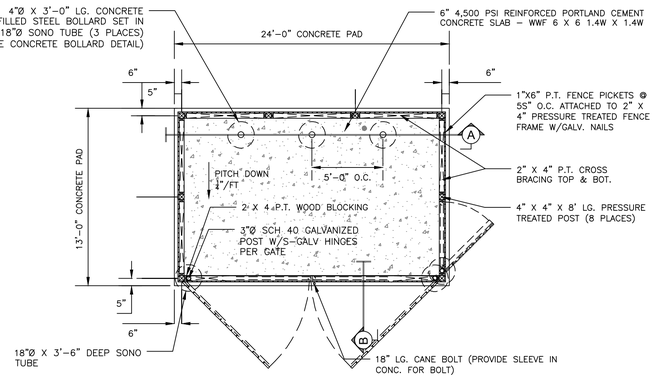
FILE:	1133_CIVIL
JN:	1133
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

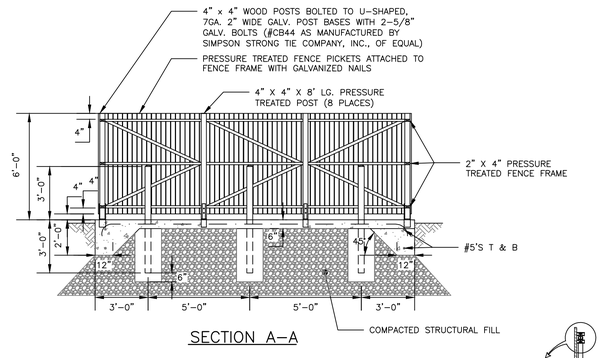
STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER
2/23/24

DRAWING NO.
C-40

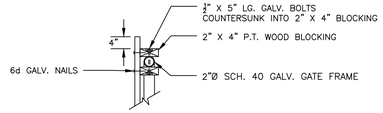


DUMPSTER ENCLOSURE PLAN AND DETAILS

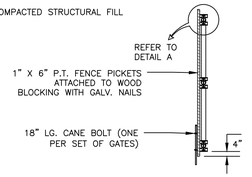
NOT TO SCALE



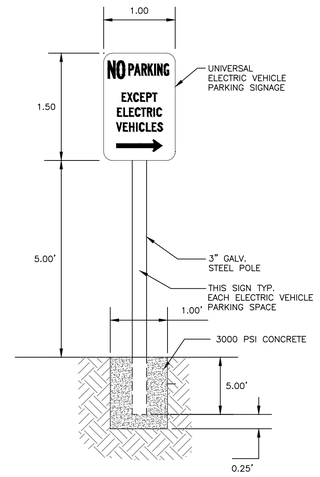
SECTION A–A



DETAIL A



SECTION B–B



NOTES:

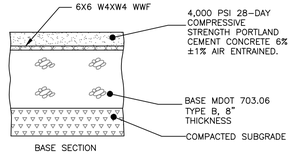
1. ALL ASPECTS OF RESERVED PARKING SIGN CONSTRUCTION SHALL BE IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION
2. SIGN SHALL BE CONSTRUCTED AS SIGN R7-111 UNDER THE "PARKING AND STANDING SIGNS AND PLAQUES" (R7 SERIES) WITHIN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION.
3. SIGN POST CONSTRUCTION AND MOUNTING SHALL BE IN ACCORDANCE WITH CHAPTER 2A OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION.

ELECTRIC VEHICLE PARKING SIGN

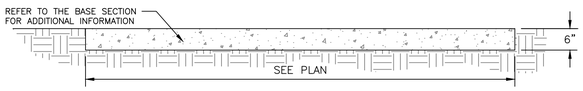
NOT TO SCALE

NOTES:

1. PROOFROLL AND COMPACT SUBGRADE
2. COMPACT AGGREGATES TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557.
3. FINISH WITH A STIFF, COARSE, FIBER BROOM.
4. REFER TO PLANS FOR DIMENSIONS.



BASE SECTION

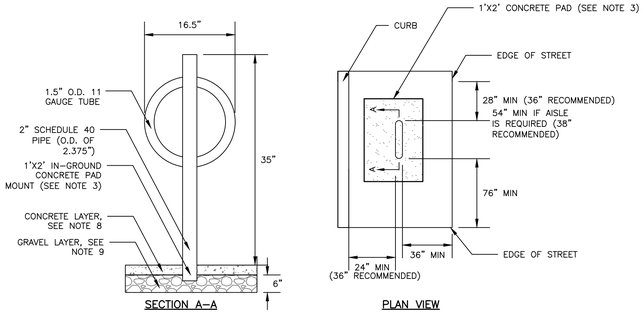


CONCRETE PAD DETAIL

NOT TO SCALE

NOTES:

1. BICYCLE RACK SHALL BE "DERO BIKE HITCH", AS MANUFACTURED BY DERO BIKE RACKS.
2. BICYCLE RACK SHALL HAVE CAPACITY FOR TWO BICYCLES.
3. BICYCLE RACK PARTS SHALL BE OF UNIFORM COLOR AND SHALL BE FINISHED IN ACCORDANCE WITH PRODUCT SPECIFICATION.
4. BICYCLE RACK SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S MOST RECENT INSTALLATION RECOMMENDATIONS, AND SHALL BE INSTALLED WITH AN IN-GROUND MOUNT UNLESS OTHERWISE APPROVED BY ENGINEER.
5. MINIMUM OFFSETS SHOWN. MANUFACTURER'S RECOMMENDED OFFSETS SHALL BE ENFORCED WHERE POSSIBLE.
6. MINIMUM DISTANCE BETWEEN BICYCLE RACKS SHALL BE 24". RECOMMENDED DISTANCE BETWEEN BICYCLE RACKS SHALL BE 36".
7. ALL OFFSETS ARE FROM OUTSIDE EDGES OF ITEMS.
8. CONCRETE SHALL BE 4000 PSI @28 DAYS. BOTTOM OF CONCRETE SHALL BE AT TOP OF SIDEWALK GRAVEL ELEVATION. DEPTH VARIES APPROX. 4"-7".
9. GRAVEL LAYER SHALL BE INSTALLED IN ACCORDANCE WITH CONCRETE SIDEWALK DETAIL, AND SHALL BE MAINEDOT 703.06 TYPE B.

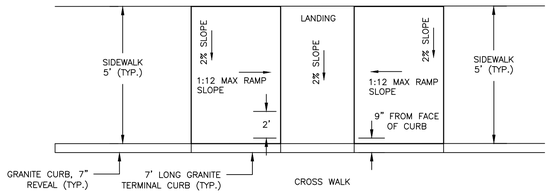


DERO BIKE HITCH

NOT TO SCALE

NOTES:

1. ALL RAMPS SHALL COMPLY WITH ADA STANDARDS
2. GRANITE CURB ADJACENT TO RAMP SHALL BE FLUSH WITH STREET
3. SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY

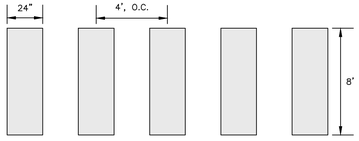


PARALLEL SIDEWALK RAMP LAYOUT FOR SIDEWALK WITHOUT ESPLANADE

NOT TO SCALE

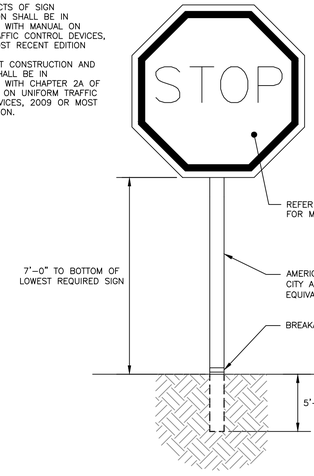
NOTES:

1. CROSSWALKS TO BE BUILT IN CONFORMANCE WITH MUTCD STANDARDS, LATEST EDITION.
2. CROSSWALKS ARE TO BE PAINTED WHITE MEETING MAINE DOT SPECIFICATIONS.
3. BLOCKS TO BE PARALLEL TO THE DIRECTION OF CAR TRAFFIC.



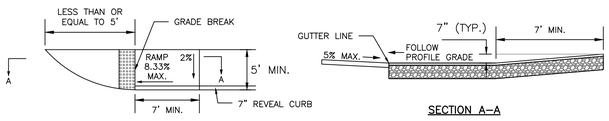
BLOCK CROSSWALK

NOT TO SCALE



TYPICAL SIGN DETAIL

NOT TO SCALE

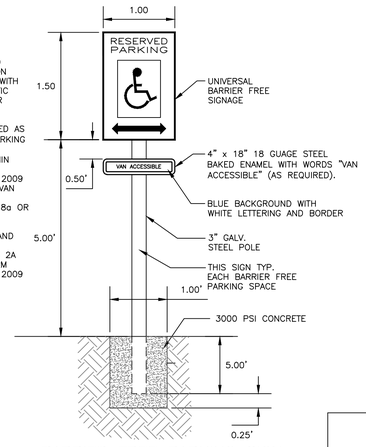


SIDE STREET PEDESTRIAN RAMP DETAIL

NOT TO SCALE

NOTES:

1. ALL ASPECTS OF RESERVED PARKING SIGN CONSTRUCTION SHALL BE IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION.
2. SIGN SHALL BE CONSTRUCTED AS SIGN R7-8 UNDER THE "PARKING AND STANDING SIGNS AND PLAQUES" (R7 SERIES) WITHIN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION. VAN ACCESSIBILITY SHALL BE CONSTRUCTED AS SIGN R7-8a OR R7-8b.
3. SIGN POST CONSTRUCTION AND MOUNTING SHALL BE IN ACCORDANCE WITH CHAPTER 2A OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION.



BARRIER FREE PARKING SIGN

NOT TO SCALE

PERMITING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
ATS LETTER	PFH 1/26/2024
CSS	PFH 2/9/2024
MAJOR SITE PLAN	PFH 2/23/2024
COMMENT RESPONSE	PFH 4/16/2024

DRAWING NAME: **SITE DETAILS - 2**

PROJECT NAME: HYATT STUDIOS HOTEL DEVELOPMENT
1060 WESTBROOK STREET, PORTLAND, ME 04102

CLIENT: GIRI PORTLAND WESTBROOK INC.
225 WEST SQUANTUM STREET, SUITE 200, QUINCY, MA 02171

ACORN ENGINEERING, INC.

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND ANY UNAUTHORIZED MODIFICATIONS OR REUSE SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
70 JOHN ROAD, CANTON, MAINE 04104
PO BOX 326 (207) 775-2655

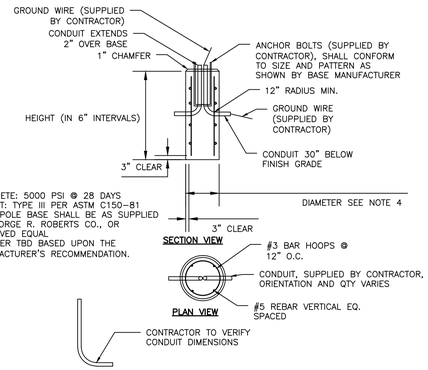
FILE:	1133_CIVIL
JN:	1133
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER

DRAWING NO.
C-41

SCHEDULE	
MIN DIAMETER	MIN EMBEDMENT
1.5'	5'

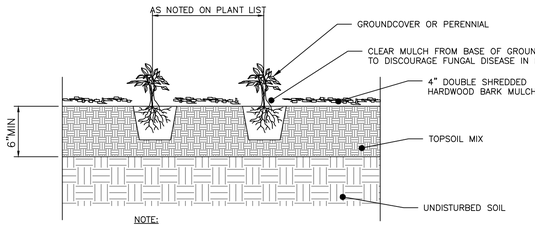
REVEALS	
APPLICATIONS	REVEAL
STREET/SIDEWALK	4"



NOTES:

1. CONCRETE: 5000 PSI @ 28 DAYS
2. CEMENT: TYPE III PER ASTM C150-81
3. LIGHT POLE BASE SHALL BE AS SUPPLIED BY GEORGE R. ROBERTS CO., OR APPROVED EQUAL
4. DIAMETER TBD BASED UPON THE MANUFACTURER'S RECOMMENDATION.

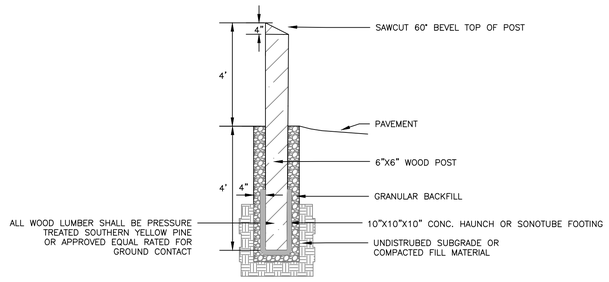
LIGHT POLE BASE
NOT TO SCALE



NOTE:

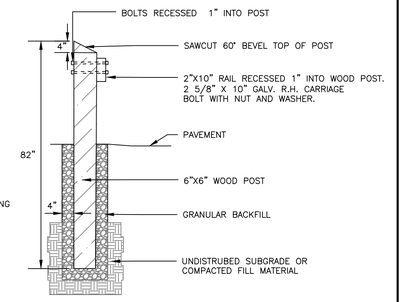
1, PLANTINGS SHALL CONFORM WITH ANSI A300 PLANTING STANDARDS

PERENNIAL PLANTING DETAIL
NOT TO SCALE

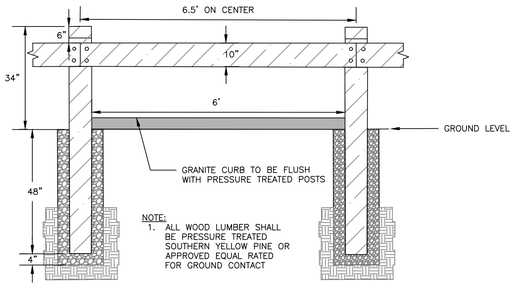


SIDE ELEVATION

WOOD POST DETAIL
NOT TO SCALE



SIDE ELEVATION



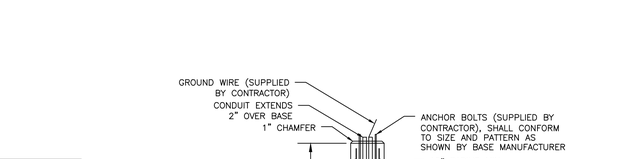
NOTE:
1. ALL WOOD LUMBER SHALL BE PRESSURE TREATED SOUTHERN YELLOW PINE OR APPROVED EQUAL RATED FOR GROUND CONTACT

FRONT ELEVATION

WOODEN GUARDRAIL DETAIL
NOT TO SCALE

NOTES:

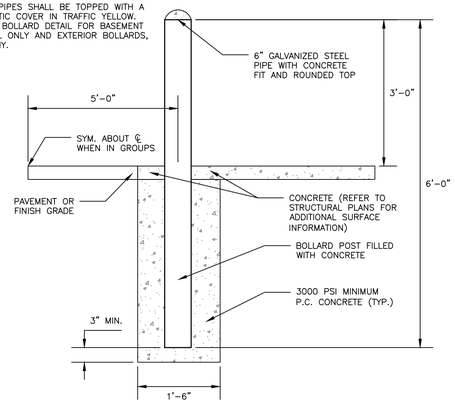
1. ALL DETECTABLE WARNING PLATES SHALL BE UNCOATED CAST IRON. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
2. CAST IN PLACE CONCRETE SHALL MEET SPECIFICATIONS FOR MDOT CLASS A STRUCTURAL CONCRETE, MINIMUM COMPRESSIVE STRENGTH 4,000 PSI. THE EXPOSED CONCRETE BORDER SHALL RECEIVE A UNIFORM BROOM FINISH PERPENDICULAR TO THE FLOW OF PEDESTRIAN TRAFFIC.
3. TRUNCATED DOMES SHALL BE ALIGNED IN ROWS, PARALLEL AND PERPENDICULAR TO THE PREDOMINANT DIRECTION OF TRAVEL. TRUNCATED DOME BRICKS AND GRANITE PAVERS ARE NOT ALLOWED.
4. SIZE: THE DETECTABLE WARNING PLATES SHALL EXTEND 24 INCHES MINIMUM IN THE DIRECTION OF TRAVEL AND THE FULL WIDTH OF THE CURB RAMP, LANDING, OR BLENDED TRANSITION TO THE STREET.
5. ORIENTATION: THE DETECTABLE WARNING PANEL SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 INCHES MINIMUM AND 8 INCHES MAXIMUM FROM THE CURB LINE. THE PANEL SHALL BE ORIENTED TO THE DIRECTION OF TRAVEL AS IDENTIFIED BY THE POINT OF EGRESS.



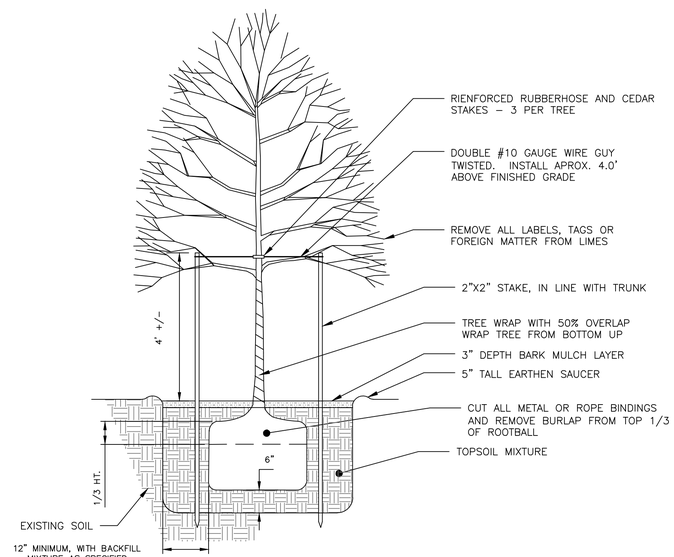
SIDEWALK RAMP DETECTABLE WARNING PANEL
NOT TO SCALE

NOTES:

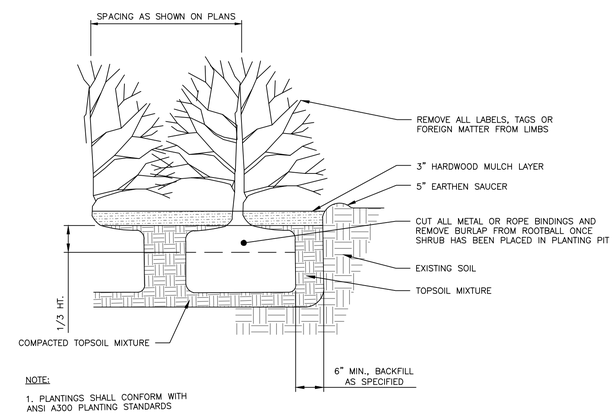
1. ALL PIPES SHALL BE TOPPED WITH A PLASTIC COVER IN TRAFFIC YELLOW.
2. PIPE BOLLARD DETAIL FOR BASEMENT LEVEL ONLY AND EXTERIOR BOLLARDS, IF ANY.



PIPE BOLLARD
NOT TO SCALE



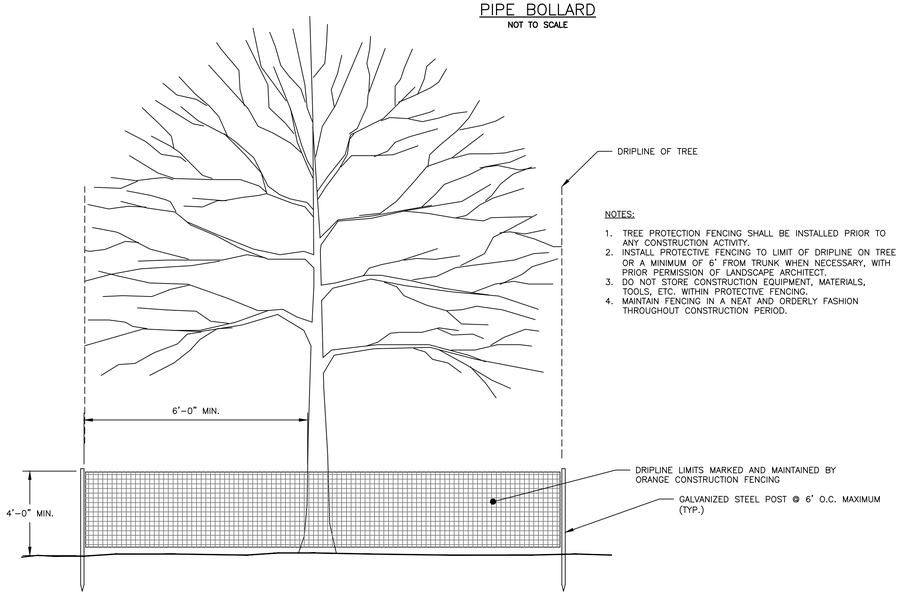
TREE PLANTING DETAIL
NOT TO SCALE



NOTE:

1, PLANTINGS SHALL CONFORM WITH ANSI A300 PLANTING STANDARDS

SHRUB PLANTING DETAIL
NOT TO SCALE



NOTES:

1. TREE PROTECTION FENCING SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY.
2. INSTALL PROTECTIVE FENCING TO LIMIT OF DRIPLINE ON TREE OR A MINIMUM OF 6' FROM TRUNK WHEN NECESSARY, WITH PRIOR PERMISSION 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.

TREE PROTECTION DETAIL
NOT TO SCALE

PERMITING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
ATS LETTER	PFH 1/26/2024
CSS	PFH 2/9/2024
MAJOR SITE PLAN	PFH 2/23/2024
COMMENT RESPONSE	PFH 4/16/2024

DRAWING NAME: **SITE DETAILS – 3**

PROJECT NAME: HYATT STUDIOS HOTEL DEVELOPMENT
1060 WESTBROOK STREET, PORTLAND, ME 04102

CLIENT: GIRI PORTLAND WESTBROOK INC.
225 WEST SQUANTUM STREET, SUITE 200, QUINCY, MA 02171

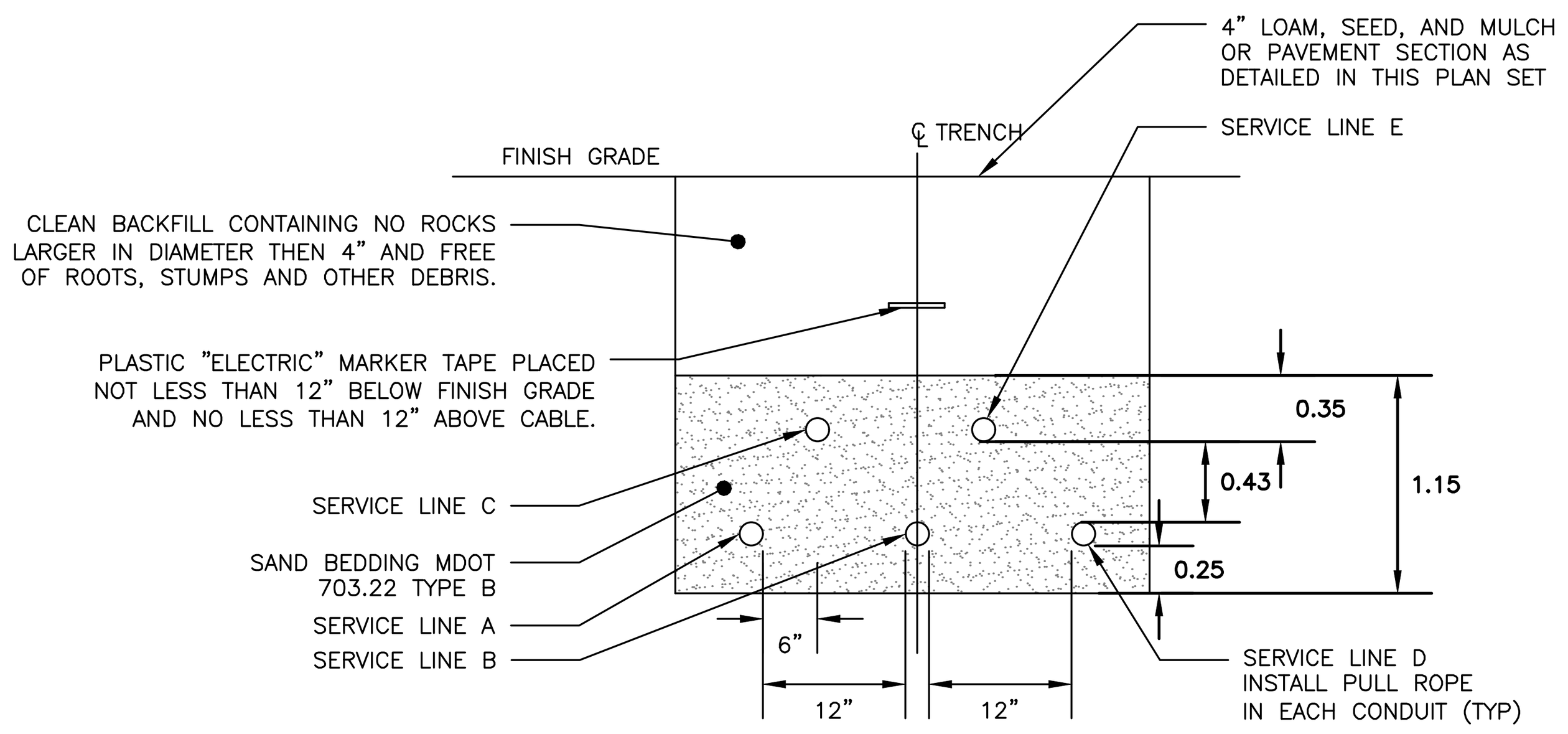
ACORN ENGINEERING, INC.
THESE PLANS SHALL NOT BE MODIFIED WITHOUT THE WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS MADE TO THESE PLANS WITHOUT THE WRITTEN PERMISSION OF ACORN ENGINEERING, INC., OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
PETER HEIL, PE, LEED AP
PO BOX 1237, ELIOT, MAINE 04104
(207) 775-2655

FILE:	1133_CIVIL
JN:	1133
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER
4/16/24

DRAWING NO.
C-42



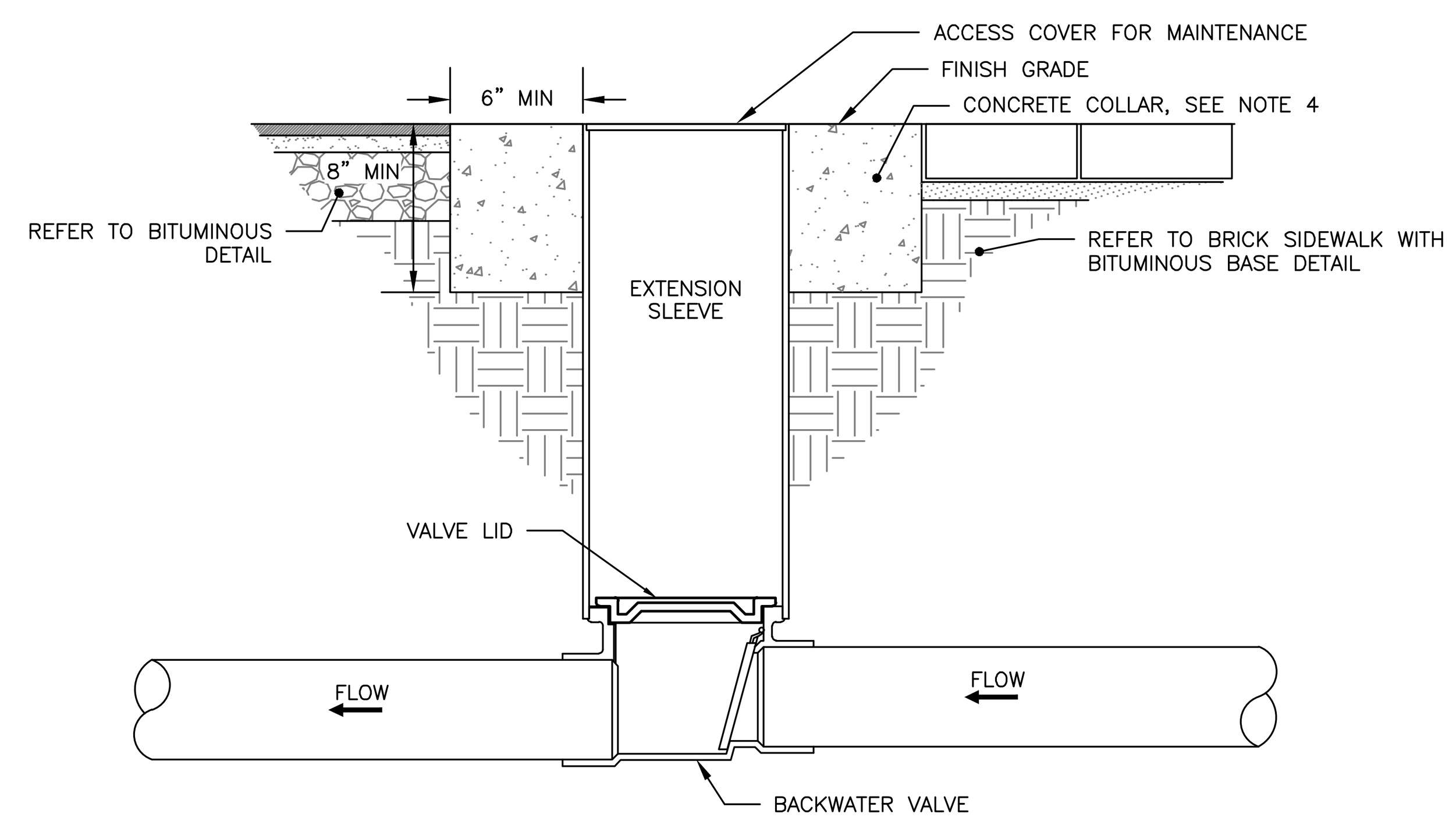
CONDUIT TYPE				
SERVICE	CONDUIT SIZE	GRASS AND PAVED AREAS	UTILITY	REMARKS
A	6"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE 1
B	6"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE 1
C	4"	SCHEDULE 40 PVC	COMMUNICATION	–
D	6"	SCHEDULE 40 PVC ELECTRICAL GRADE	SPARE	SEE NOTE 1
E	4"	SCHEDULE 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.
4. FINAL SIZE OF CONDUITS TO BE SPECIFIED BY MEP, ELECTRICIAN, OR DESIGN/BUILD ELECTRICAL CONTRACTOR.

UTILITY TRENCH – PRIMARY AND SECONDARY POWER, TELEPHONE, AND CABLE

NOT TO SCALE



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.

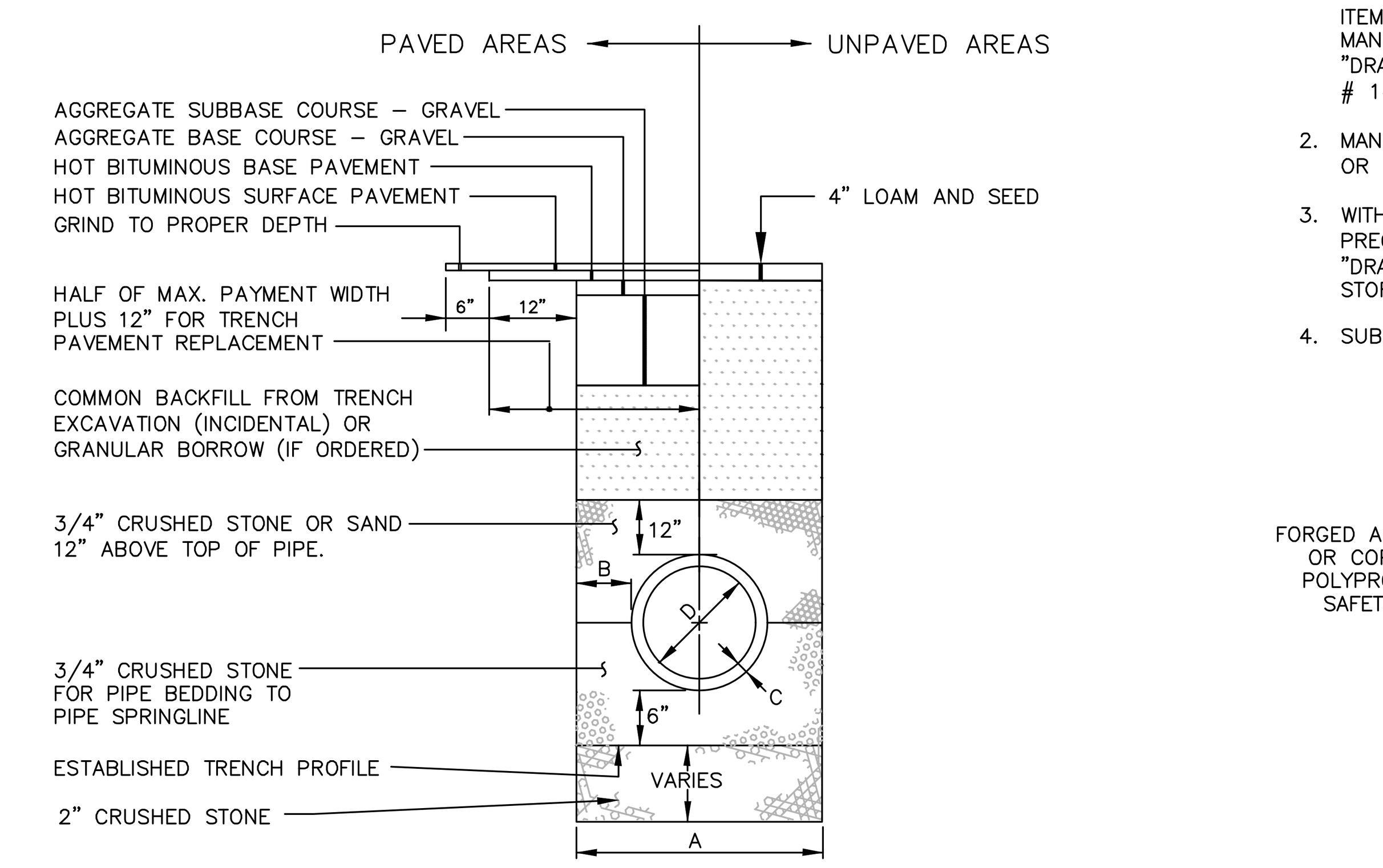
BACKFLOW VALVE ASSEMBLY

NOT TO SCALE

NOTES:

DEPTH OF BITUMINOUS PAVEMENT AND AGGREGATE COURSES SHALL BE DETERMINED BY STREET CLASSIFICATION.

ANY ALTERNATE TRENCHING OR PAYMENT METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY OF PORTLAND, DEPARTMENT OF PUBLIC SERVICES.



NOTES:

1. ALTERNATIVE CONSTRUCTION METHODS OR PAYMENT METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY.
2. 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.
3. DIMENSION B SHALL BE SUFFICIENT TO ALLOW CRUSH STONE BEDDING TO BE PLACED AND COMPACTED UNDER THE HAUNCHES OF THE PIPE; BUT IN ALL CASES DIMENSION B SHALL BE AT LEAST 9".
4. 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 FOLLOWING TABLE.

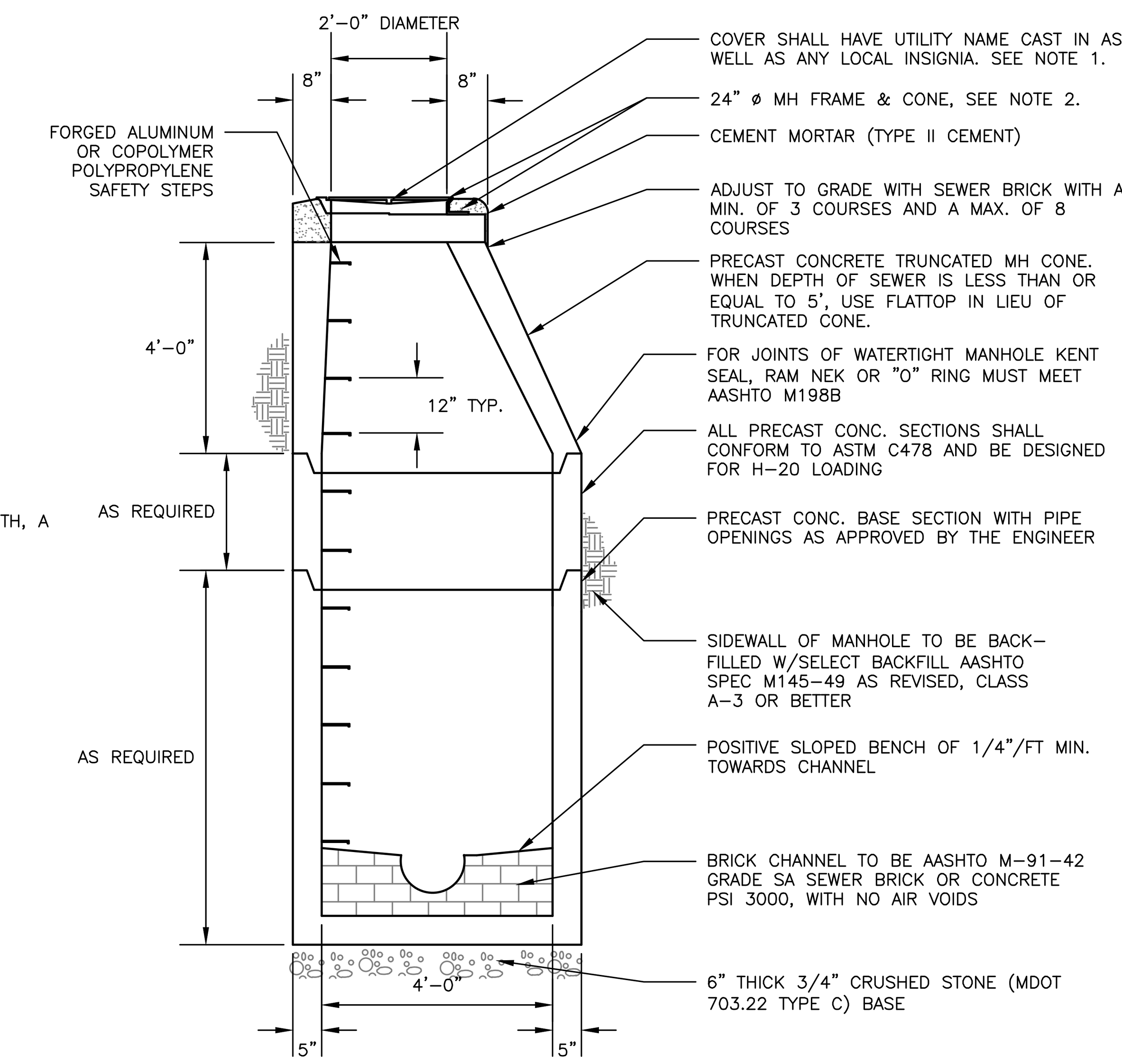
PIPE DIAMETER, D (INCHES)	MAX. TRENCH WIDTH, A (FEET)
4	4.0
6	4.0
8	4.0
10	4.0
12	5.0
15	5.0
18	5.0
21	5.0
24	6.0
27	6.0
30	6.0
36	6.0
42	7.0
48	7.0

TYPICAL PIPE TRENCH INSTALLATION

NOT TO SCALE

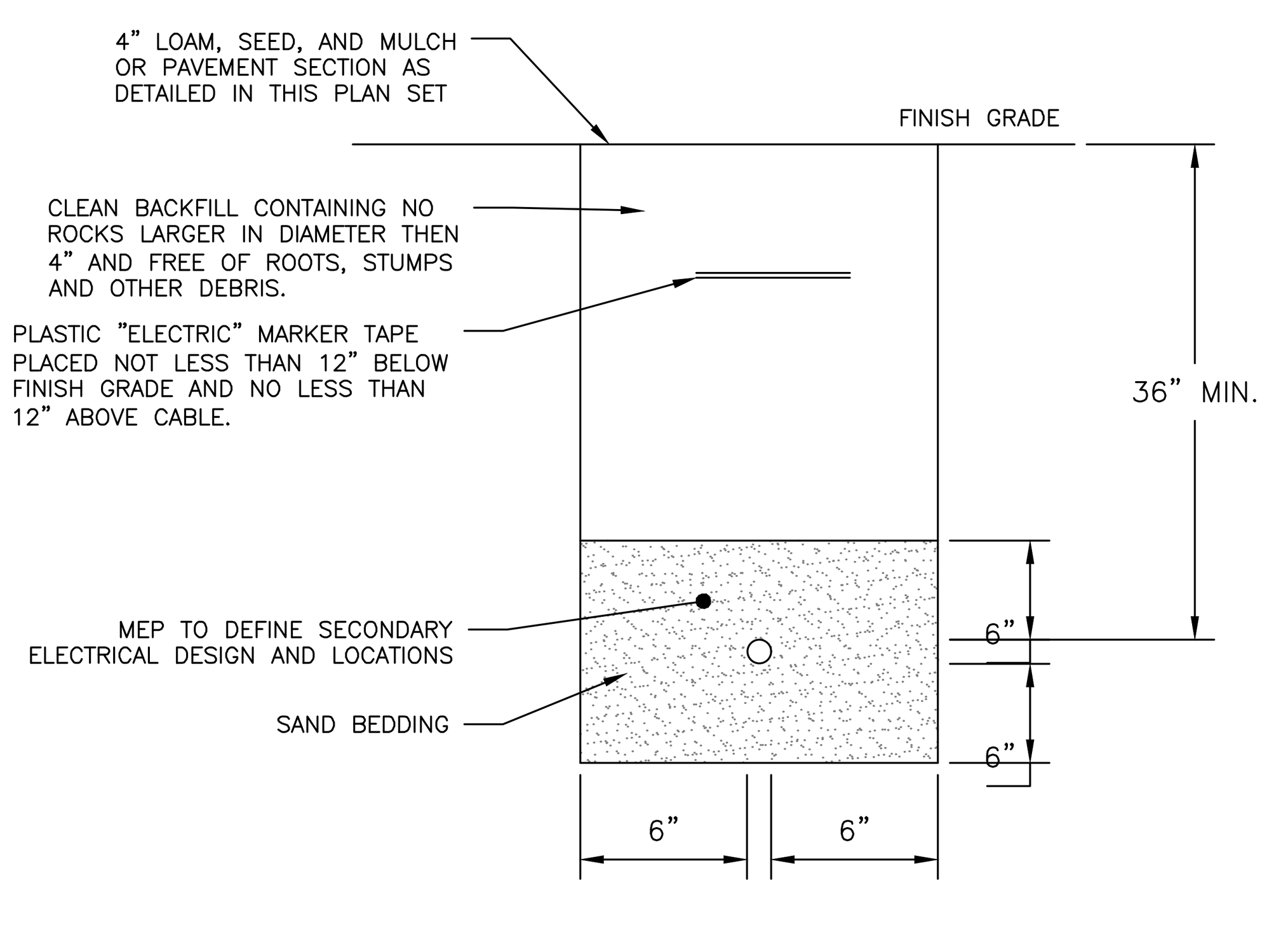
NOTES:

1. MANHOLE COVER FOR SEWER MANHOLE SHALL BE ENGRAVED "SEWER", AND SHALL BE EITHER ITEM # 2160A AS MANUFACTURED BY EAST JORDAN CO. OR ITEM # 14960002 AS MANUFACTURED BY NEENAH FOUNDRY. MANHOLE COVER FOR STORM SEWER SHALL BE ENGRAVED "DRAIN", AND SHALL BE EITHER ITEM # 2160A AS MANUFACTURED BY EAST JORDAN CO. OR ITEM # 14960003 AS MANUFACTURED BY NEENAH FOUNDRY.
2. MANHOLE FRAME SHALL BE EITHER ITEM # 14960001, AS MANUFACTURED BY NEENAH FOUNDRY, OR ITEM # 1960Z, AS MANUFACTURED BY EAST JORDAN CO.
3. WITHIN CITY OF PORTLAND ROW, STORM DRAIN MANHOLE SHALL CONFORM WITH "STANDARD PRECAST SEWER MANHOLE DETAIL", WITH THE EXCEPTION THAT THE COVER SHALL BE MARKED AS "DRAIN". REFER TO CITY OF PORTLAND TECHNICAL MANUAL, SECTION 2 – SANITARY SEWER AND STORM DRAIN, FIGURE II–1
4. SUBMITTAL REQUIRED FOR MANHOLES, MANHOLE FRAMES & MANHOLE COVERS



STANDARD PRECAST SEWER MANHOLE

NOT TO SCALE



SECONDARY ELECTRICAL TRENCH

NOT TO SCALE

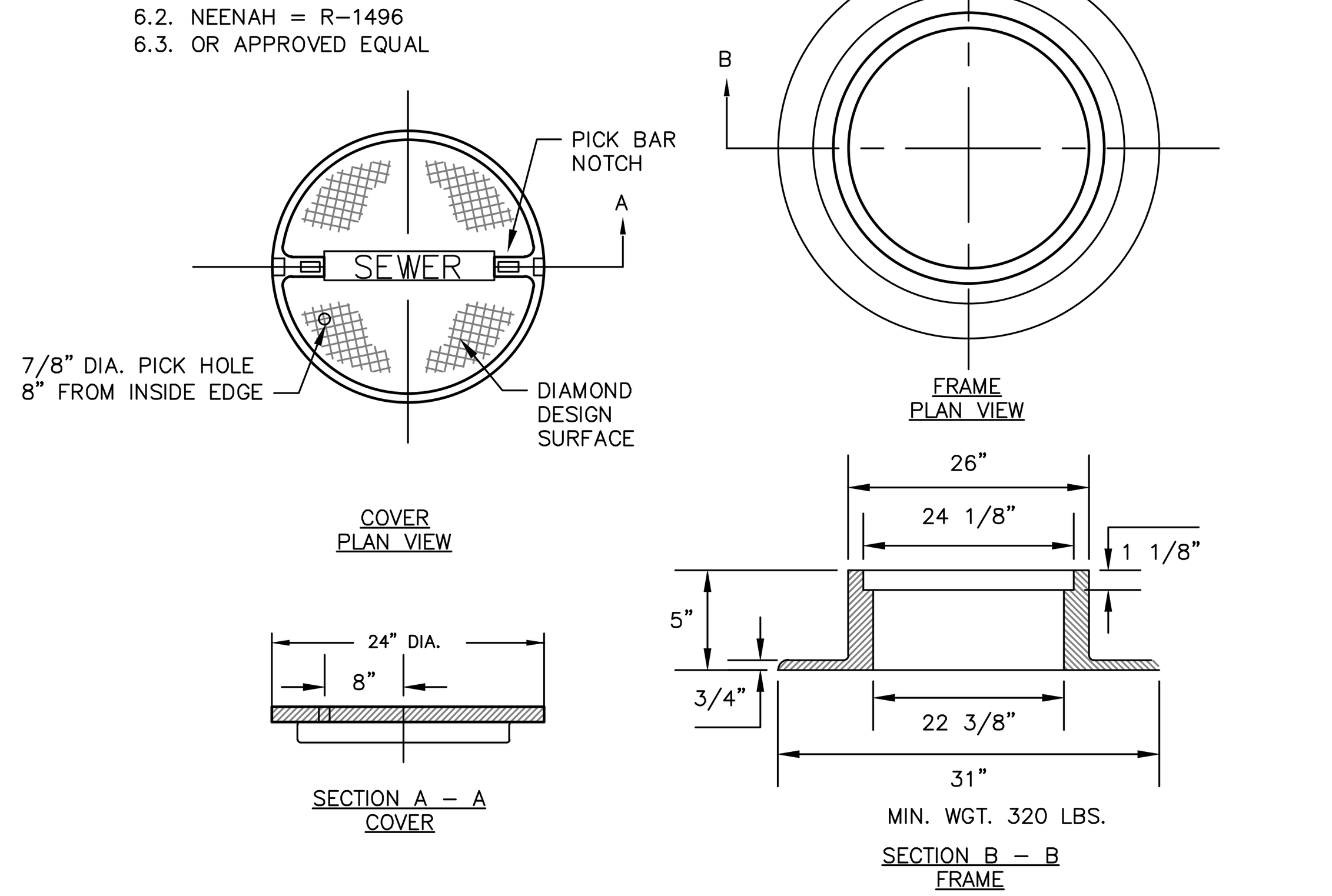
NOTES:

1. ALL MANHOLE COVERS SHALL BE SOLID AND SHALL HAVE ONE 7/8" DIAMETER DRILLED PICK HOLE, LOCATED 8" FROM THE CENTER OF THE COVER
2. ALL SANITARY AND STORMWATER/DRAIN MANHOLE COVERS SHALL BE 24" x 5".
3. ALL SANITARY MANHOLE COVERS AND SHALL HAVE "SEWER" CAST INTO THE COVER.
4. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
5. APPROVED MANHOLE FRAMES:

5.1. EAST JORDAN = 1690Z
5.2. NEENAH = R–1496
5.3. OR APPROVED EQUAL

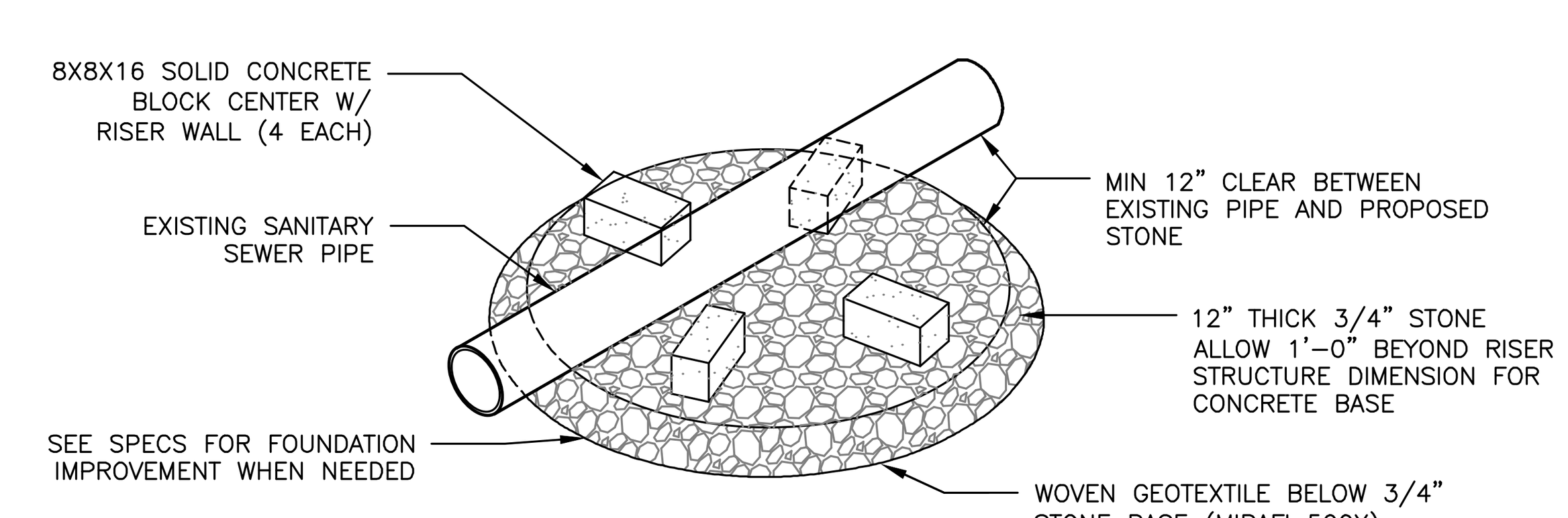
6. APPROVED MANHOLE COVERS

6.1. EAST JORDAN = 2160A
6.2. NEENAH = R–1496
6.3. OR APPROVED EQUAL

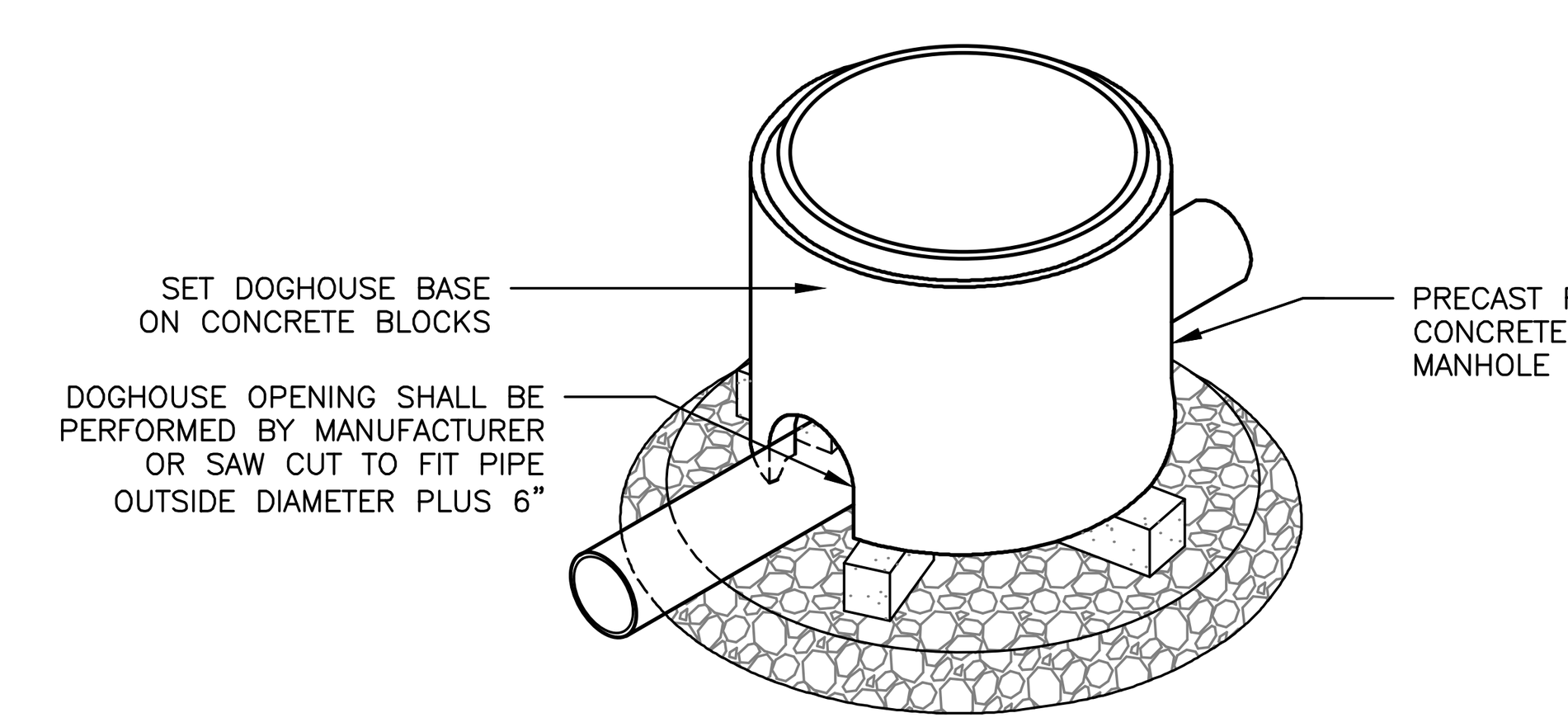


CAST IRON MANHOLE COVER AND FRAME

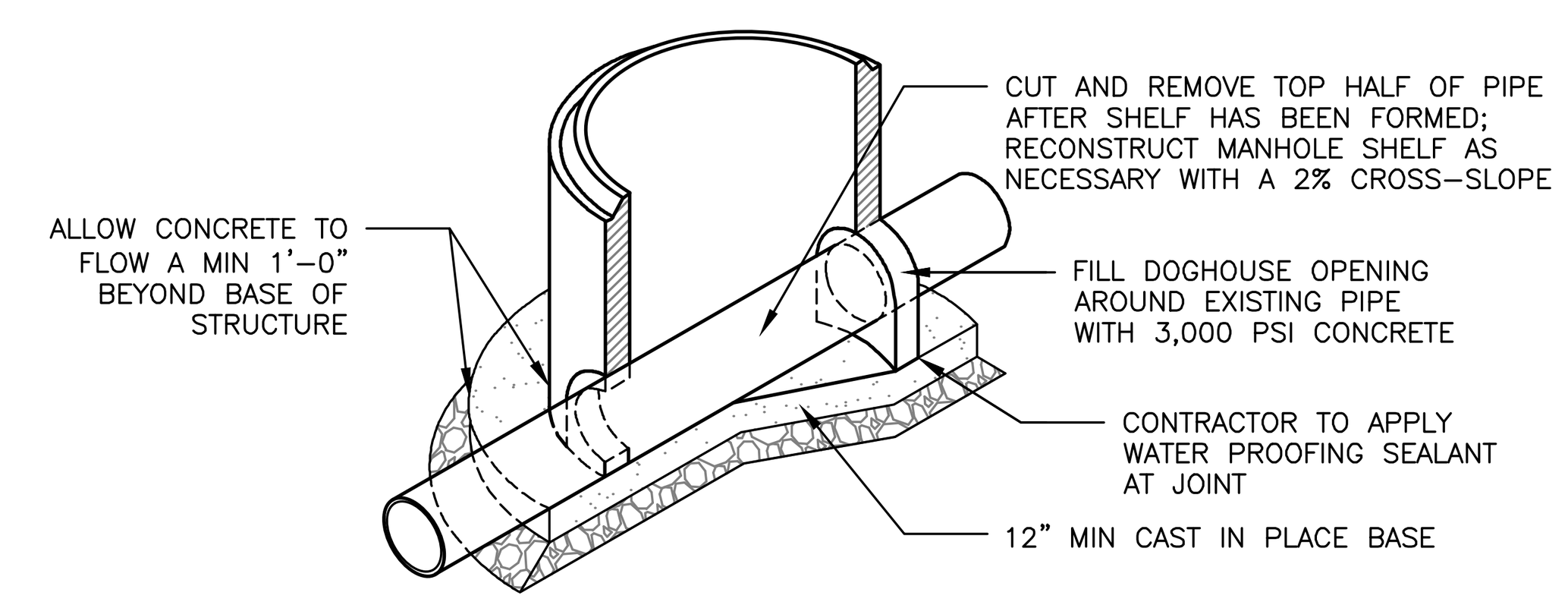
NOT TO SCALE



BASE ISOMETRIC VIEW



RISER ISOMETRIC VIEW



FOUNDATION SECTION VIEW

NOTES:

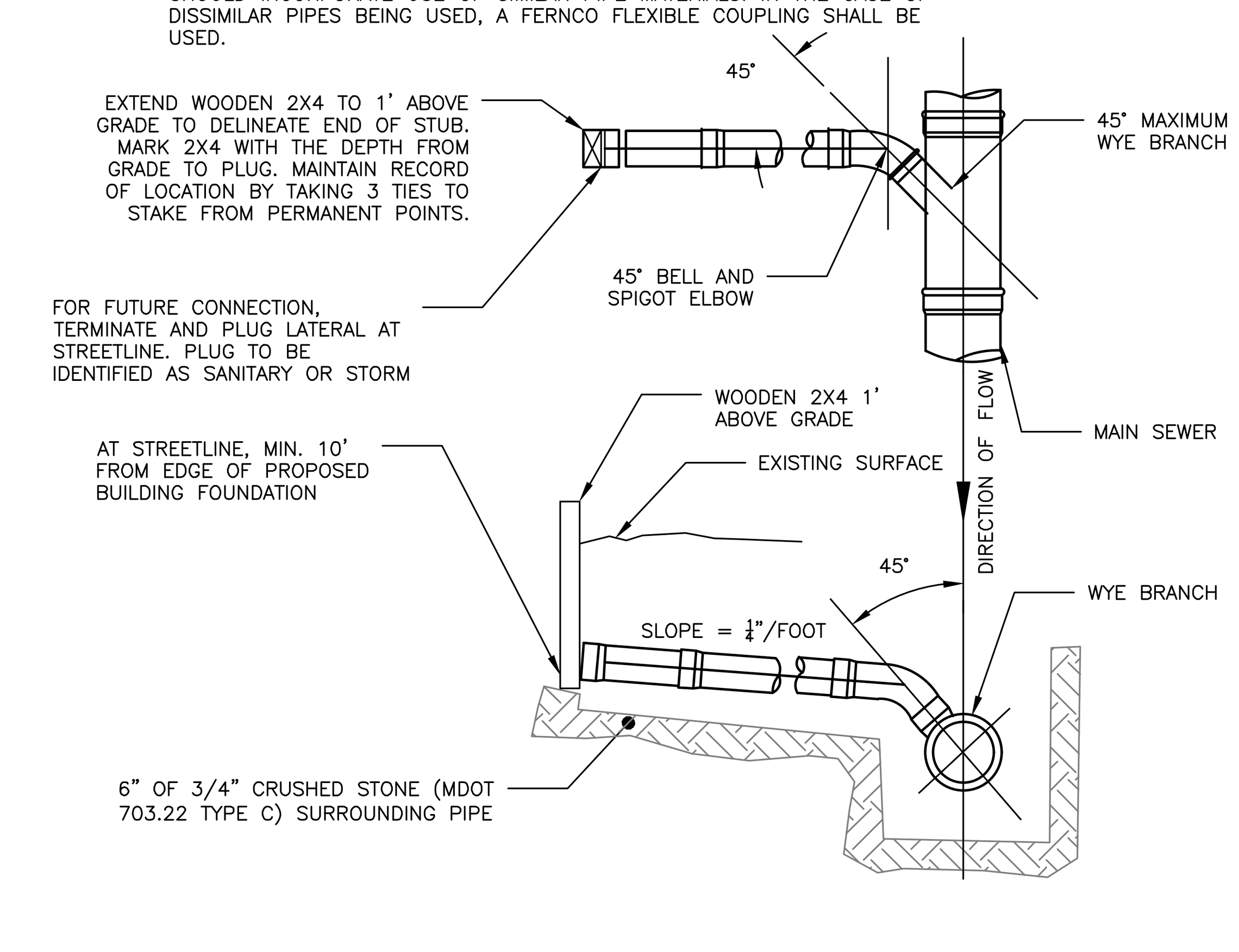
1. UNLESS OTHERWISE SPECIFIED, CONCRETE SHALL BE 4000 PSI @28 DAYS.
2. RECONSTRUCT INTERIOR MANHOLE INVERT AS NECESSARY TO ACCOMMODATE NEW PIPE.
3. THIS DETAIL IS INTENDED TO PROVIDE ADDITIONAL INFORMATION TO THE CONTRACTOR IN REGARDS TO THE CONNECTION OF THE DOGHOUSE MANHOLE BASE TO THE EXISTING SANITARY SEWER SYSTEM.
4. MANHOLES MAY BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE, OR CAST IN PLACE.
5. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPEC. C–478.
6. ALL MANHOLE RISERS SHALL BE ETHERIDGE 24" OR APPROVAL EQUAL.
7. ALL SANITARY MANHOLES SHALL HAVE A WATERPROOFING COATING APPLIED TO THE EXTERIOR SURFACE.
8. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48–CLASS 35.

DOGHOUSE MANHOLE DETAIL

NOT TO SCALE

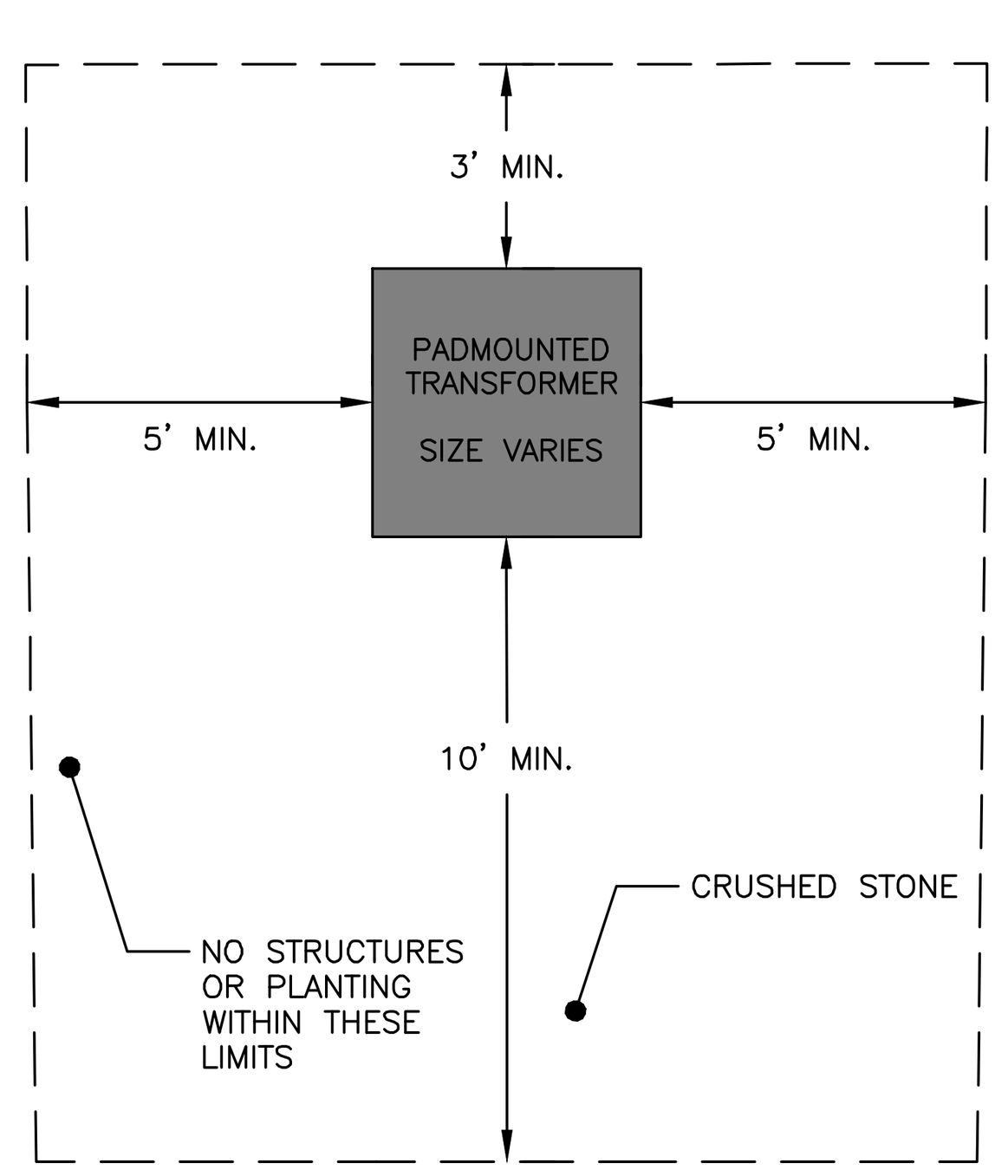
NOTES:

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

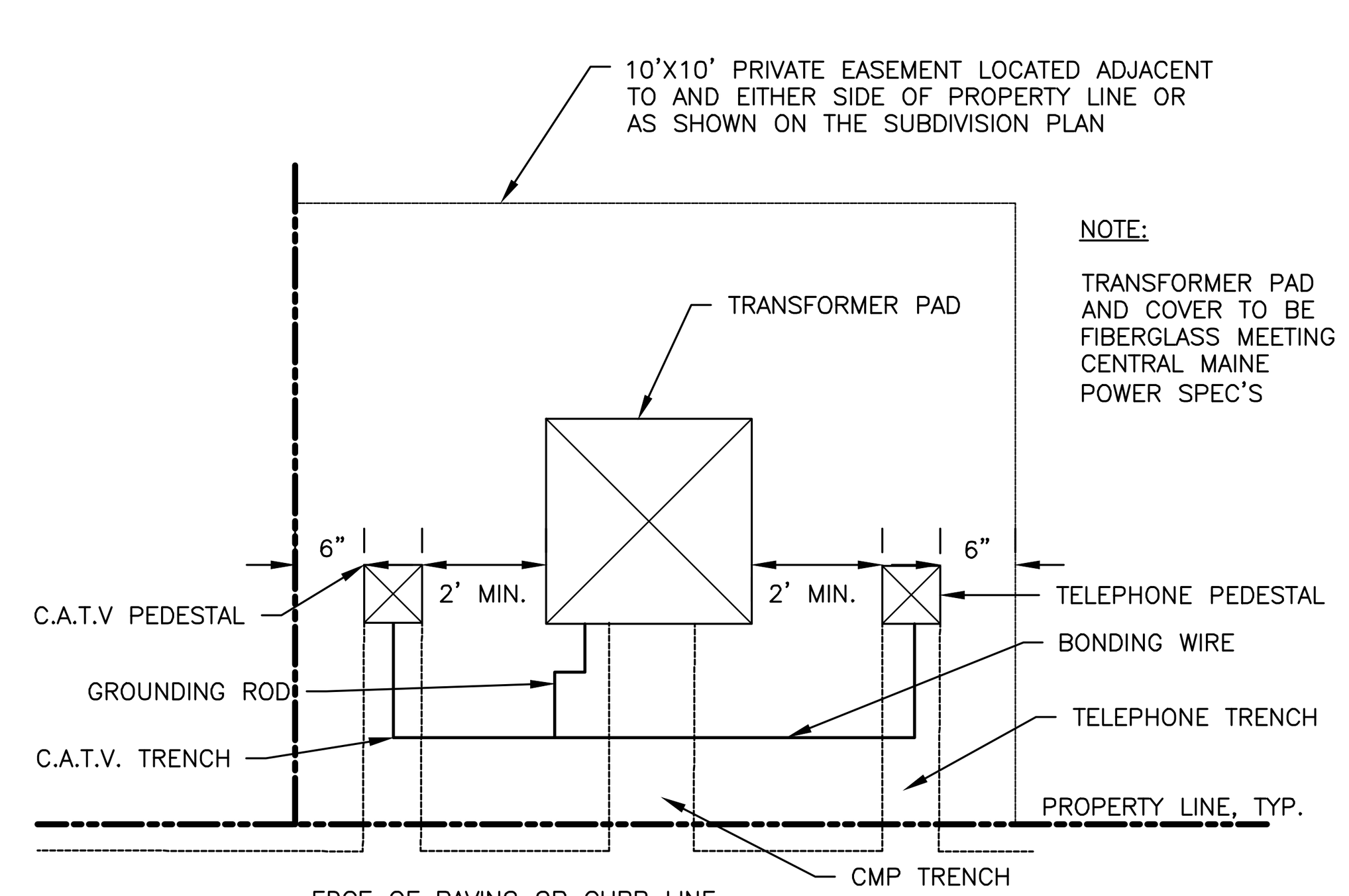


NOTES:

1. WHERE DANGER OF PLOW OR TRAFFIC DAMAGE EXISTS, BARRIERS CONSISTING OF CONCRETE FILLED 6 INCH IPS STEEL POSTS SET 4 FEET DEEP SHALL BE PROVIDED FOR PROTECTION (PRESSURE TREATED 6X6 INCH MIN. TIMBER POSTS MAY BE SUBSTITUTED IN RESIDENTIAL AREAS). POSTS SHALL NOT INTERFERE WITH TRANSFORMER ACCESS. GENERALLY THE POSTS SHALL BE LOCATED NEAR THE CORNERS OF THE TRANSFORMERS.
2. THE SETBACKS DEPICT CLEARANCES FROM OBSTRUCTIONS INCLUDING TREES, SHRUBS, AND FENCES.
3. THERE SHALL BE NO OPENINGS IN THE BUILDING WALL IN BACK OF, BESIDE, OR OVER THE TRANSFORMER UNLESS THE TRANSFORMER IS A MIN. OF 10 FEET FROM THE BUILDING.
4. SIDE CLEARANCES FROM DOORS OR WINDOWS SHALL NOT BE LESS THAN 10 FEET.
5. THERE SHALL BE A MIN. OF 10 FEET BETWEEN THE TRANSFORMER AND ANY GAS METER/REGULATOR, GAS RELIEF VALVE, GAS VENT DISCHARGE, GAS FILLING CONNECTION, OR PROPANE TANK. SOME INSURANCE COMPANIES MAY REQUIRE INCREASED CLEARANCES.
6. TRANSFORMER SHALL BE LOCATED FAR ENOUGH AWAY FROM BUILDING OVERHANGS SO THAT THEY WILL NOT BE SUBJECT TO DAMAGE BY FALLING ICE AND SNOW.
7. IF TRANSFORMER IS NOT INSTALLED IMMEDIATELY UPON THE INSTALLATION OF THE CABLE IN THE PAD, THE CONTRACTOR SHALL PROVIDE AND INSTALL A CMP APPROVED CONCRETE, STEEL, OR FIBERGLASS COVER OVER THE PAD OPENING TO ELIMINATE EXPOSURE OF THE CABLE.

CMP TRANSFORMER SETBACKS

NOT TO SCALE



TYPICAL TRANSFORMER DETAIL

NOT TO SCALE

PERMITING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
ATS LETTER	PFH 1/26/2024
CSS	PFH 2/9/2024
MAJOR SITE PLAN	PFH 2/23/2024

DRAWING NAME: UTILITY DETAILS – 1

PROJECT NAME: HYATT STUDIOS HOTEL DEVELOPMENT
1060 WESTBROOK STREET, PORTLAND, ME 04102

CLIENT: GIRI HOTEL MANAGEMENT
225 WEST SQUANTUM STREET, SUITE 200, QUINCY, MA 02171

ACORN ENGINEERING, INC.
ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775–2655

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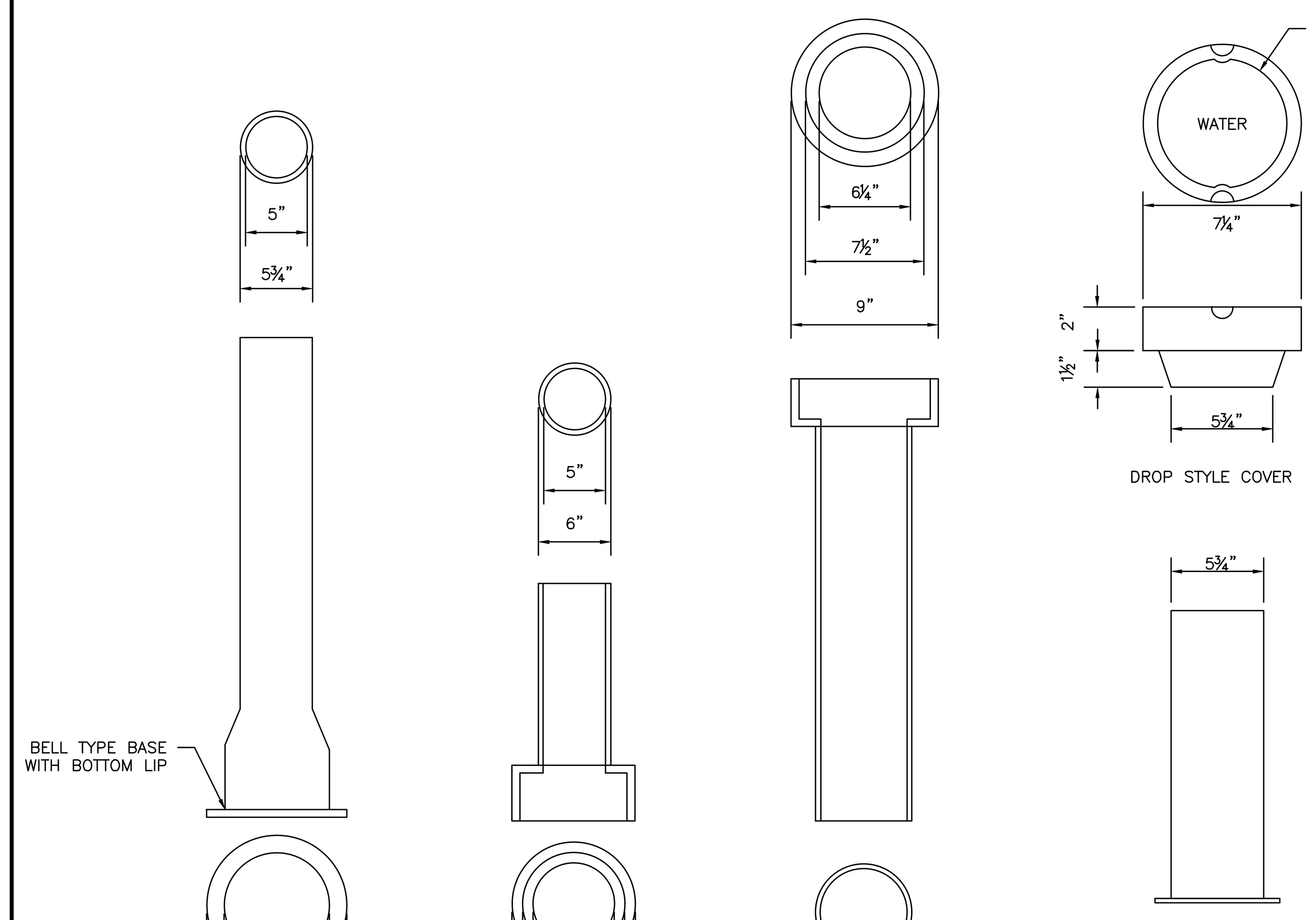
FILE:	1133_CIVIL
JN:	1133
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER
2/23/24

DRAWING NO.
C-43



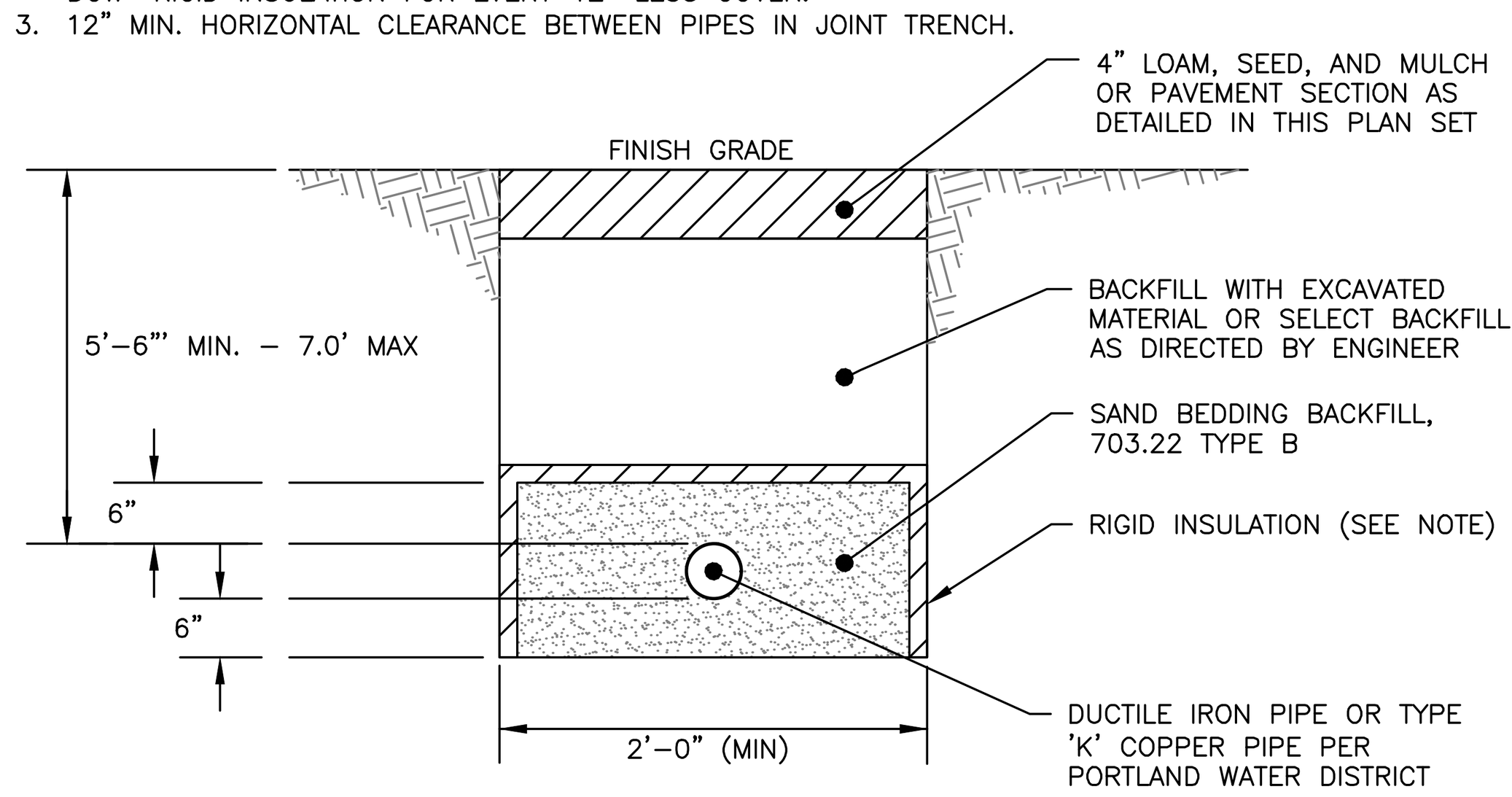
NOTES:

1. DIMENSIONS APPLICABLE FOR 5 ¼" BUFFALO VALVE BOXES
2. BASE SECTION MAY BE USED AS INTERMEDIATE SECTION

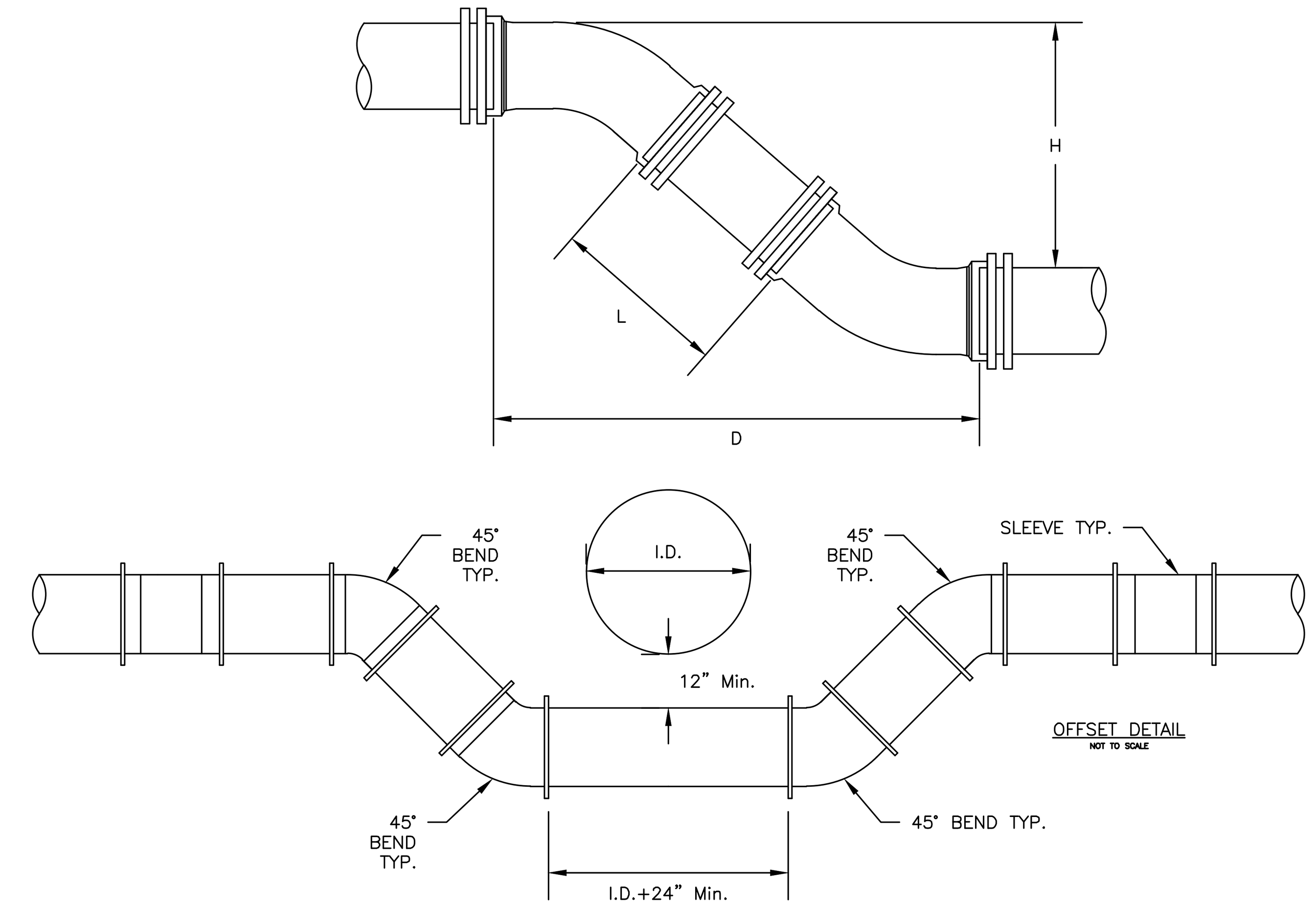
VALVE BOX & COVER
NOT TO SCALE

NOTES:

1. THE WATER TRENCH SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT STANDARD DETAILS & SPECIFICATIONS.
2. IF LESS THAN 5'-6" OF COVER IS NECESSARY ADD 1 INCH OF "BLUE DOW" RIGID INSULATION FOR EVERY 12" LESS COVER.
3. 12" MIN. HORIZONTAL CLEARANCE BETWEEN PIPES IN JOINT TRENCH.



WATER SERVICE TRENCH SECTION DETAIL
NOT TO SCALE

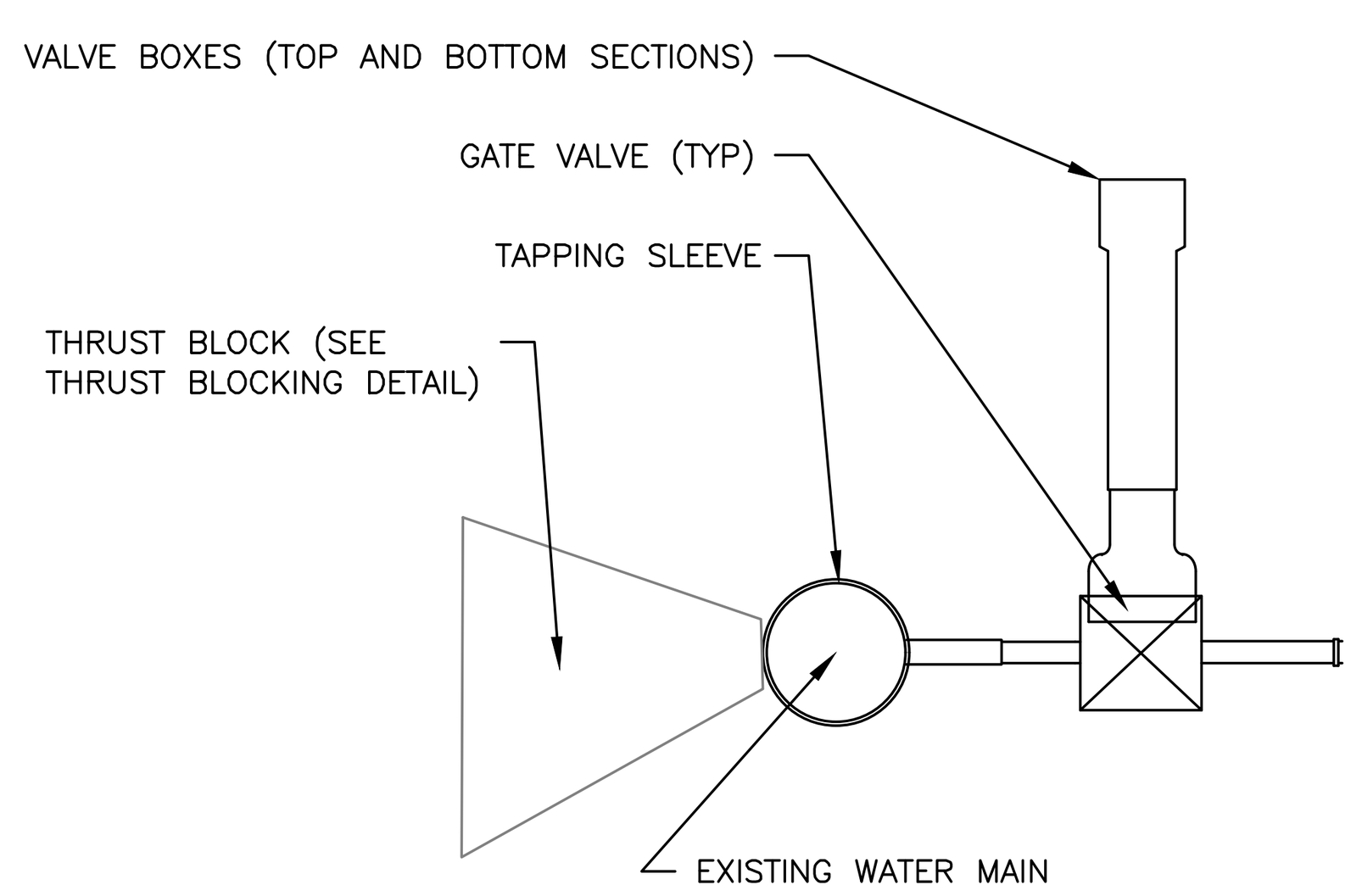


	8" PIPE	
H	D	L
12"	1' 7-1/2"	0' 9-1/2"
13"	1' 8-1/2"	0' 10-7/8"
14"	1' 9-1/2"	1' 0-5/16"
15"	1' 10-1/2"	1' 1-11/16"
16"	1' 11-1/2"	1' 3-1/8"
17"	2' 0-1/2"	1' 4-9/16"
18"	2' 1-1/2"	1' 5-15/16"
19"	2' 2-1/2"	1' 7-3/8"
20"	2' 3-1/2"	1' 8-13/16"
21"	2' 4-1/2"	1' 10-3/16"
22"	2' 5-1/2"	1' 11-5/8"
23"	2' 6-1/2"	2' 1"
24"	2' 7-1/2"	2' 2-7/16"
25"	2' 8-1/2"	2' 3-7/8"
26"	2' 9-1/2"	2' 5-1/4"
27"	2' 10-1/2"	2' 6-11/16"
28"	2' 11-1/2"	2' 8-1/8"
29"	3' 0-1/2"	2' 9-1/2"
30"	3' 1-1/2"	2' 10-15/16"
31"	3' 2-1/2"	3' 0-5/16"
32"	3' 3-1/2"	3' 1-3/4"
33"	3' 4-1/2"	3' 3-3/16"
34"	3' 5-1/2"	3' 4-9/16"
35"	3' 6-1/2"	3' 6"
36"	3' 7-1/2"	3' 7-7/16"
37"	3' 8-1/2"	3' 8-13/16"
38"	3' 9-1/2"	3' 10-1/4"
39"	3' 10-1/2"	3' 11-11/16"
40"	3' 11-1/2"	4' 1-1/16"
41"	4' 0-1/2"	4' 2-1/2"
42"	4' 1-1/2"	4' 3-7/8"
43"	4' 2-1/2"	4' 5-5/16"
44"	4' 3-1/2"	4' 6-3/4"
45"	4' 4-1/2"	4' 8-1/8"
46"	4' 5-1/2"	4' 9-9/16"
47"	4' 6-1/2"	4' 10-15/16"
48"	4' 7-1/2"	5' 0-3/8"
49"	4' 8-1/2"	5' 1-13/16"
50"	4' 9-1/2"	5' 3-3/16"
51"	4' 10-1/2"	5' 4-5/8"
52"	4' 11-1/2"	5' 6-1/16"
53"	5' 0-1/2"	5' 7-7/16"
54"	5' 1-1/2"	5' 8-7/8"
55"	5' 2-1/2"	5' 10-5/16"

NOTE:

DIMENSIONS APPLICABLE FOR SIGMA COMPACT BENDS. FOR TYLER COMPACT BENDS, ADD 1/2" TO "D" DIMENSION AND SUBTRACT 1/2" FROM "L" DIMENSION. FOR OTHER FITTINGS REFER TO MANUFACTURER'S RECOMMENDATIONS.

TYPICAL MAIN OFFSET
NOT TO SCALE

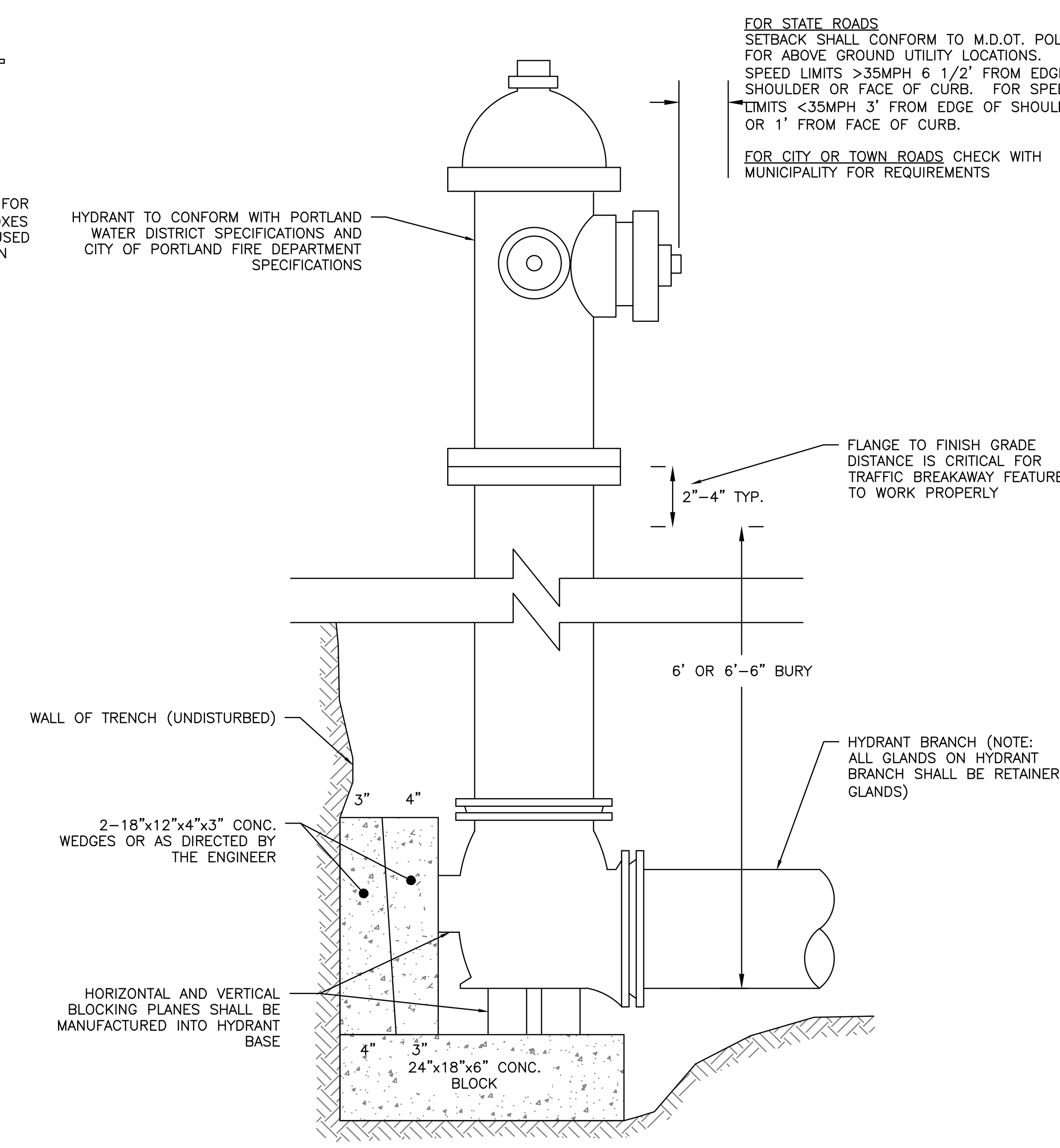


SIDE VIEW

TAPPING SLEEVE AND VALVE
NOT TO SCALE

FOR STATE ROADS
SETBACK SHALL CONFORM TO M.D.OT. POLICY FOR ABOVE GROUND UTILITY LOCATIONS. FOR SPEED LIMITS >35MPH 6 1/2' FROM EDGE OF SHOULDER OR FACE OF CURB. FOR SPEED LIMITS <35MPH 3' FROM EDGE OF SHOULDER OR 1' FROM FACE OF CURB.

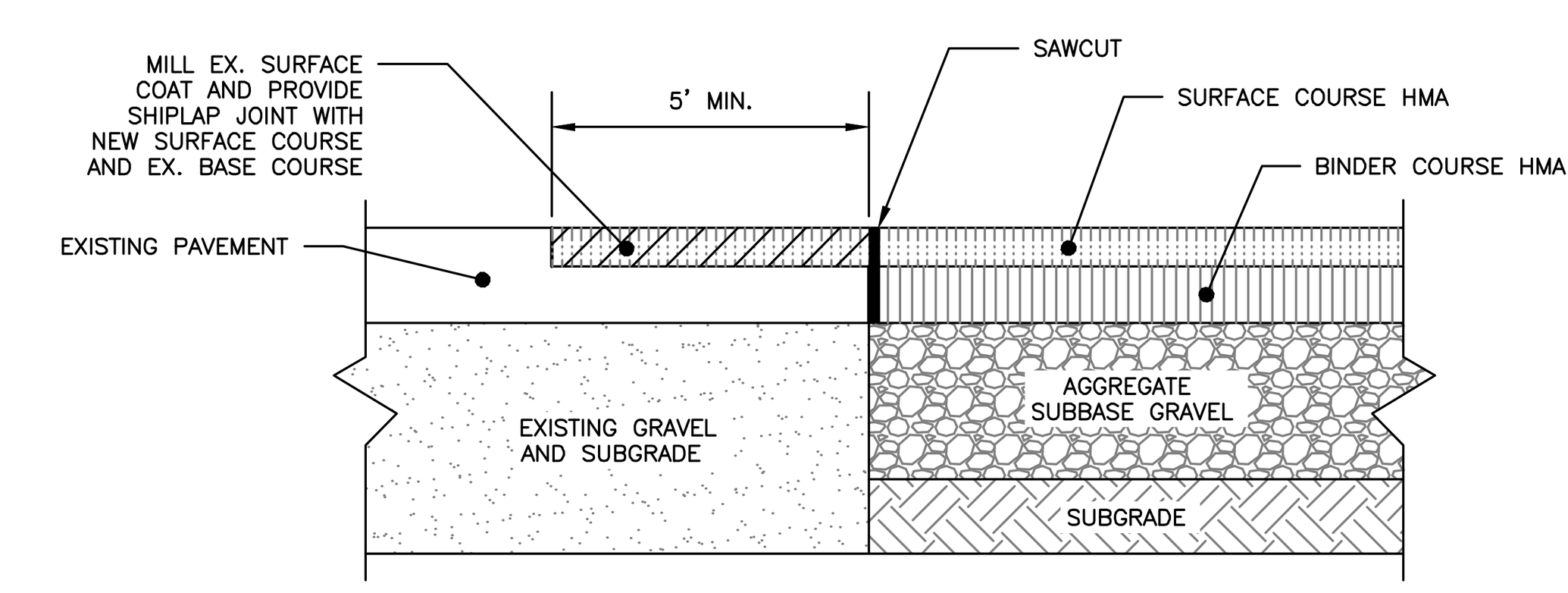
FOR CITY OR TOWN ROADS CHECK WITH MUNICIPALITY FOR REQUIREMENTS



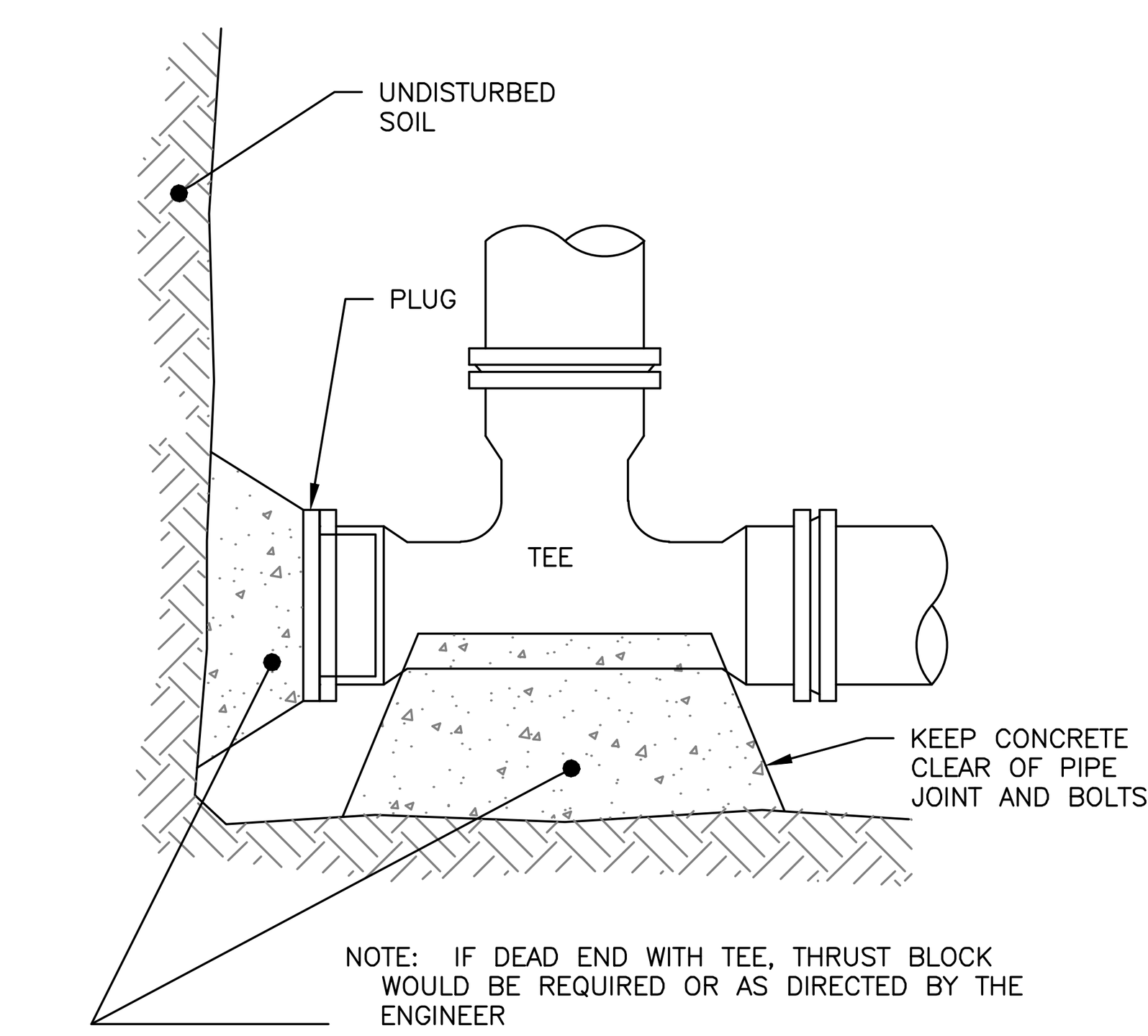
TYPICAL HYDRANT INSTALLATION DETAIL
NOT TO SCALE

NOTES:

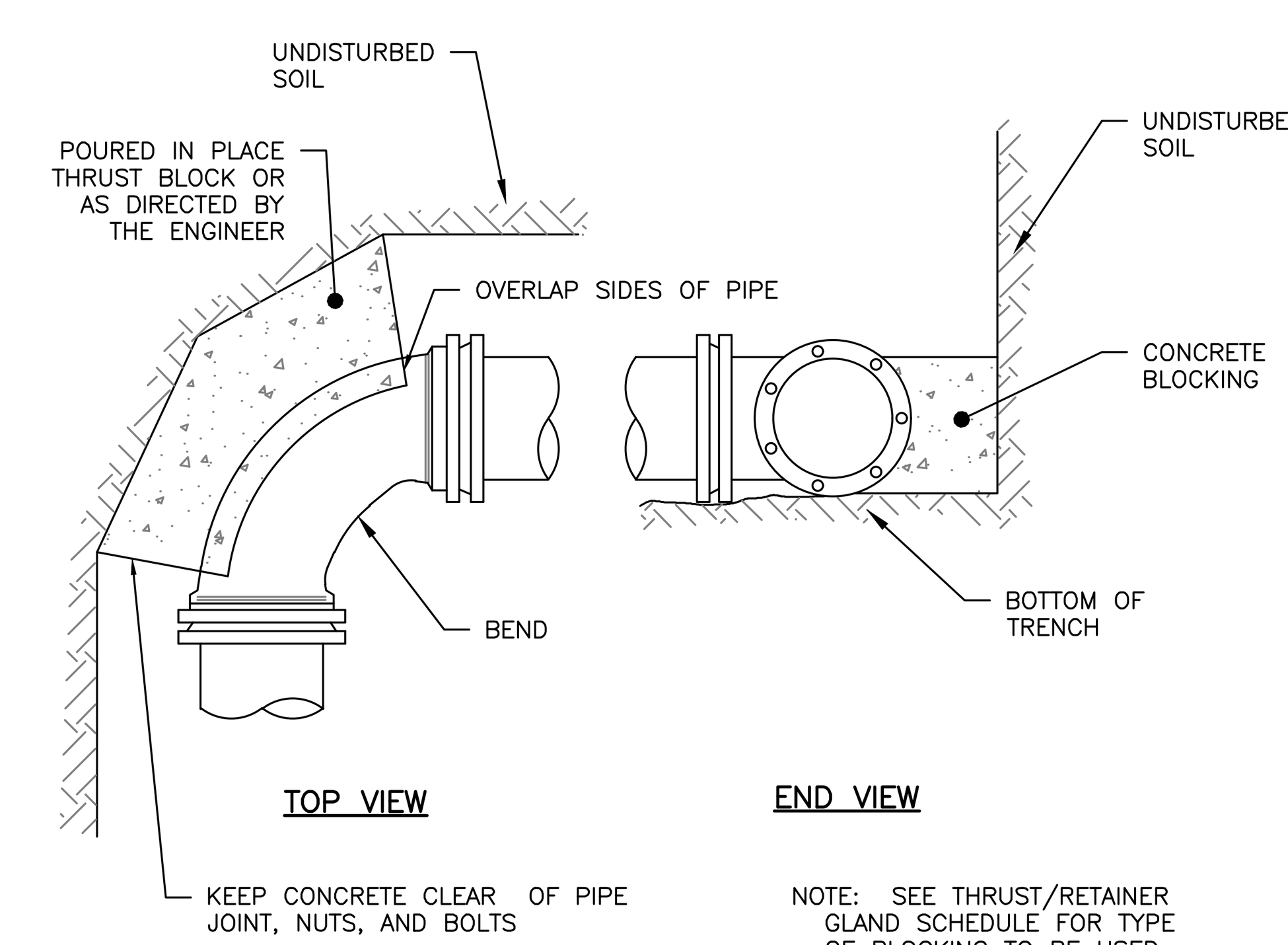
1. SAWCUT EXISTING PAVEMENT AND REMOVE 5' STRIP OF EXISTING PAVEMENT TO CREATE A UNIFORM AND RIGID BUTT JOINT TO CREATE SHIPLAP JOINTS BETWEEN THE PAVEMENT LAYERS.
2. APPLY BITUMINOUS TACK COAT AT AN APPLICATION RATE OF 0.10 TO 0.14 GALLONS PER SQUARE YARD TO EXISTING PAVEMENT JOINTS AND SURFACES PRIOR TO PLACEMENT OF NEW BITUMINOUS PAVEMENT.
3. THE NEW PAVEMENT SECTION SHALL MEET "PAVEMENT PROFILE DETAIL" AT A MINIMUM OR THE EXISTING PAVEMENT AND AGGREGATE BASE AND SUBBASE DEPTH WHICHEVER IS GREATER.



PAVEMENT SAWCUT WITH SHIPLAP JOINTS DETAIL
NOT TO SCALE



END SECTION



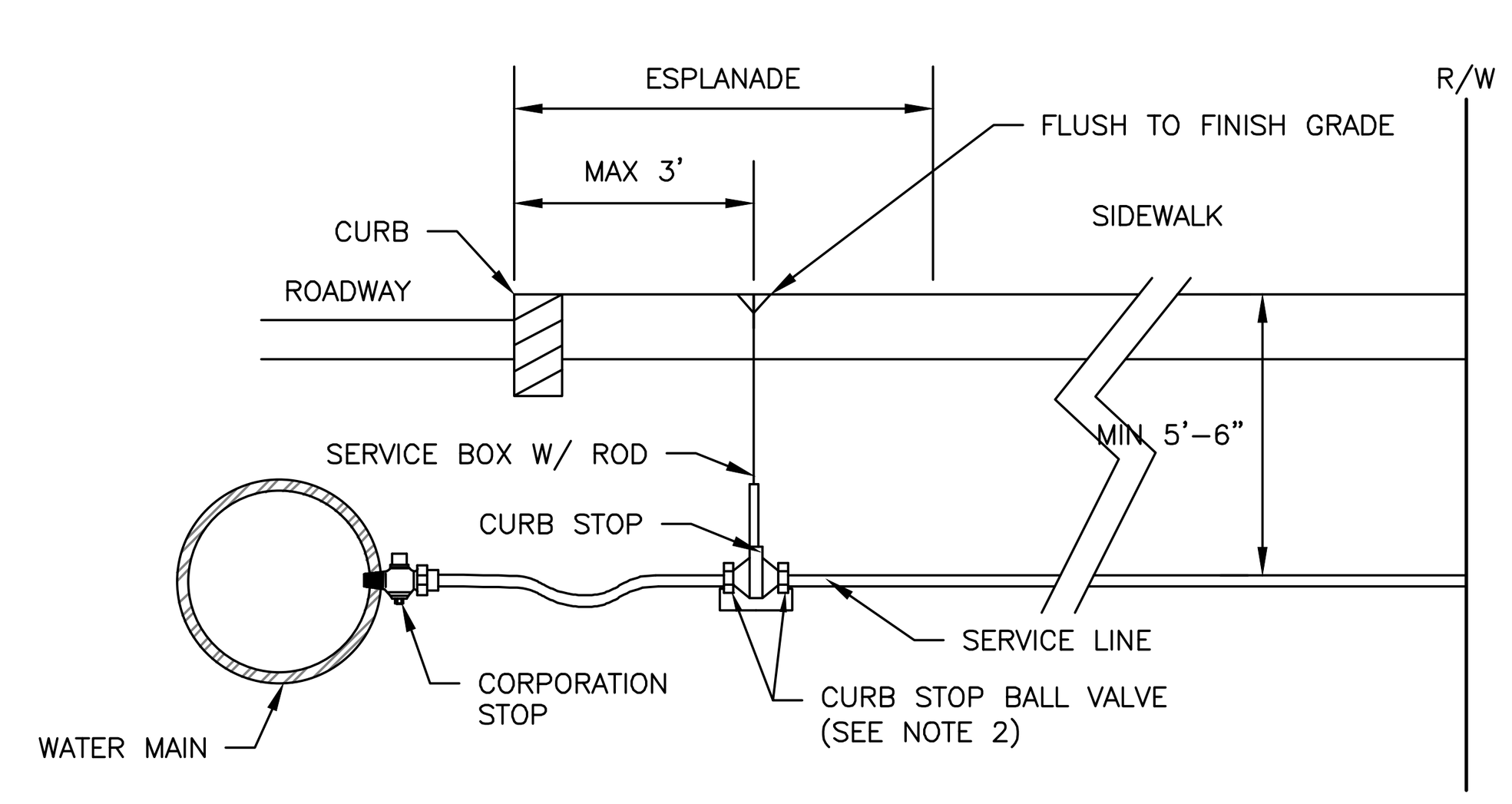
NOTE: SEE THRUST/RETAINER GLAND SCHEDULE FOR TYPE OF BLOCKING TO BE USED ON BENDS

REGULAR BEND

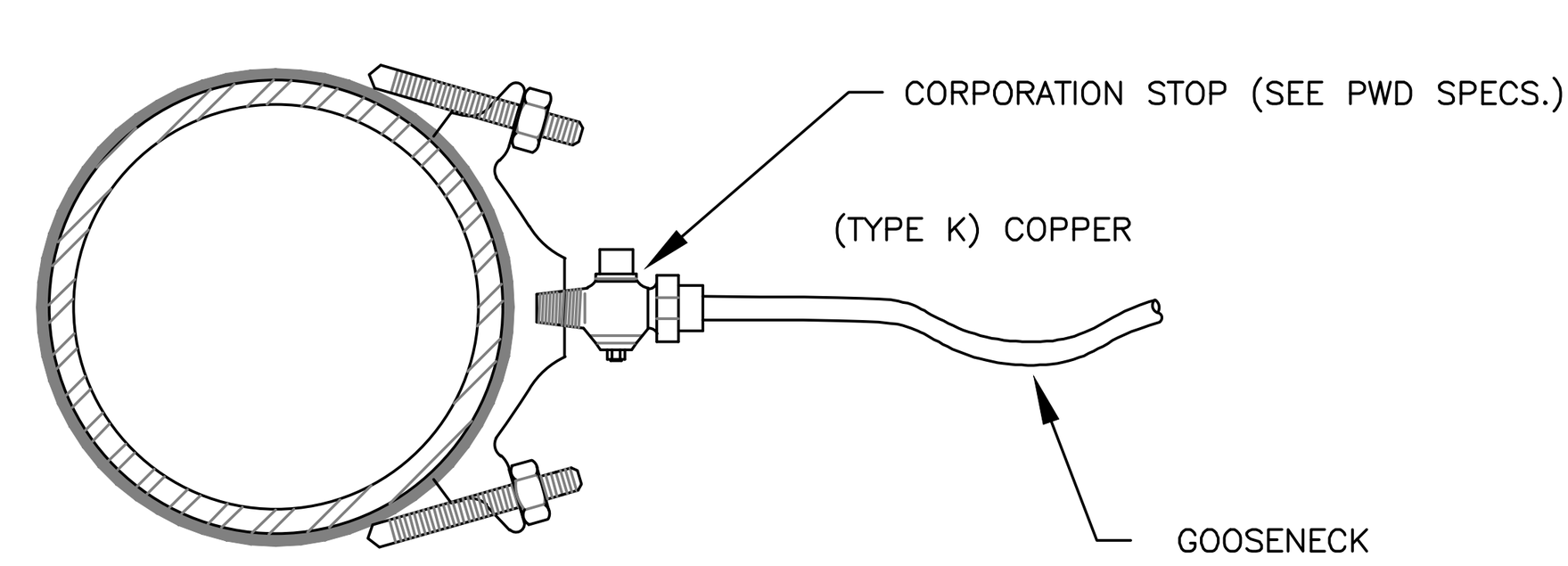
THRUST BLOCKING
NOT TO SCALE

NOTES:

1. ALL MATERIALS AND INSTALLATION PROCEDURES MUST COMPLY WITH 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.
5. CURB STOP TO BE INSTALLED IN PERVIOUS AREAS TO THE GREATEST EXTENT FEASIBLE. FOR LOTS IN WHICH THE CURB STOP MUST BE LOCATED IN A SIDEWALK OR DRIVEWAY, CONTRACTOR TO CONTACT PWD FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
6. CONTRACTOR TO COIL ACCESS PIPE ON PRIVATE PROPERTY PRIOR TO CONNECTION TO HOUSE. ACCESS PIPE TO BE ADEQUATELY MARKED IF BURIED OR PROTECTED IF STORED ABOVE GROUND.



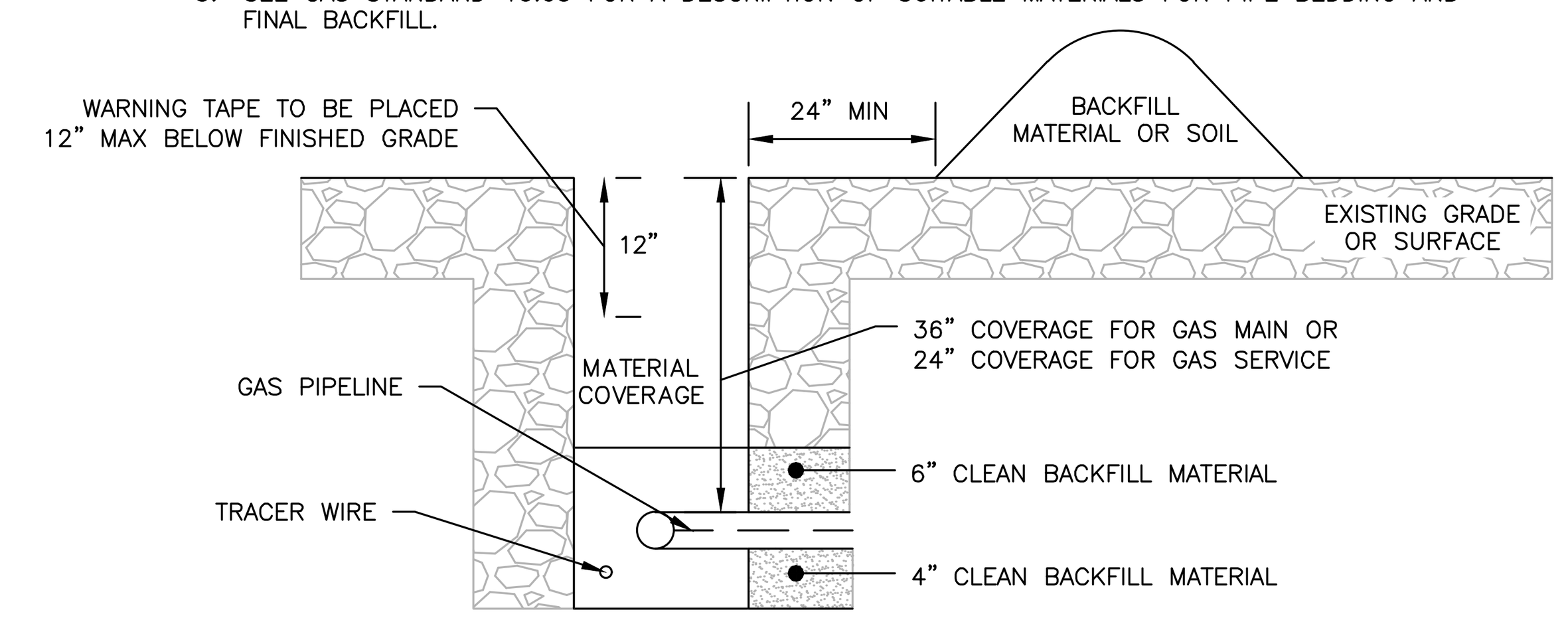
TYPICAL SERVICE CONNECTION
NOT TO SCALE



SERVICE SADDLE: 1-1/2" AND 2" C.C. THREAD
NOT TO SCALE

NOTES:

1. INSTALL MAINS WITH A MINIMUM OF 36" OF COVER AND SERVICES WITH A MINIMUM OF 24" OF COVER. EXCEPTIONS MAY BE MADE WITHIN SLATE AND FEDERAL CODES WITH THE PRIOR APPROVAL OF THE OPERATIONS CENTER MANAGER. INSTALL PLASTIC PIPE WITH SLACK SO EXTERNAL LOADING OR THERMAL CONTRACTION WILL NOT PLACE UNNECESSARY STRESS ON THE PIPE OR JOINTS. IN CASES WHERE A STOPPER FITTING OF OTHER NEW MATERIAL IS ADDED TO AN OLDER MAIN SUCH THAT THE MAIN HAS LESS THAN 24" OF COVE, THE CONTRACTOR SHOULD PROVIDE PERMANENT PROTECTION SUCH AS CONCRETE. WHENEVER A MAIN WILL BE INSTALLED WITH LESS THAN 24" OF COVER, NOTIFY THE OPERATIONS CENTER MANAGER OR THE DESIGNEE SO THEY CAN REQUEST APPROVAL FROM THE DEPARTMENT OF PUBLIC UTILITIES.
2. PROCEDURE – SEE FIGURE BELOW
   - 2.1. REMOVE ALL EXCESS WATER FROM THE TRENCH WITH PUMPS OR EQUIVALENT
   - 2.2. PLACE A LAYER OF SAND 4" DEEP IN TRENCH BOTTOM BEFORE LAYING THE PIPE IN THE TRENCH. THE OPERATIONS CENTER MANAGER OR COMPANY FIELD REPRESENTATIVE MAY ALLOW USE OF CLEAN FILL MATERIAL INSTEAD OF SAND PROVIDED IT IS CLEAN AND FREE OF ANY OBJECTS THAT MAY IMPINGE ON THE PIPE.
   - 2.3. FOR PLASTIC PIPE, INSTALL NUMBER 12 AWG SOLID COPPER WIRE (TRACER WIRE) WITH YELLOW INSULATION JACKET ALONG THE LENGTH OF THE SERVICE. THIS WIRE IS USED TO LOCATE THE PIPE. DO NOT PHYSICALLY ATTACH THE WIRE OR ALLOW THE WIRE TO TOUCH THE PLASTIC PIPE. KEEP THE TRACER WIRE AT LEAST 4" AWAY FROM THE PLASTIC PIPE. IF THE INSTALLATION IS TRENCHLESS, THE TRACER WIRE MAY BE LESS THEN 4" AWAY FROM THE PLASTIC PIPE.
   - 2.4. PLACE A MINIMUM OF 6" OF SAND OVER THE PIPE. THE OPERATIONS CENTER MANAGER OR COMPANY FIELD REPRESENTATIVE MAY ALLOW USE OF CLEAN FILL MATERIAL INSTEAD OF SAND PROVIDED IT IS CLEAN AND FREE OF ANY OBJECTS THAT MAY IMPINGE ON THE PIPE.
   - 2.5. PLACE WARNING TAPE IN THE TRENCH NOT MORE THAN 12" BELOW FINISHED GRADE. THE STANDARD WARNING TAPE IS YELLOW, NON-DETECTABLE TAPE, 6" WIDE.
   - 2.6. FILL THE REST OF THE TRENCH WITH CLEAN FILL MATERIAL, USING THE SPOIL WHERE SUITABLE AND ACCEPTABLE. IF THE ORIGINAL SPOIL MATERIAL IS NOT SUITABLE FOR USE AS A SUB-GRADE MATERIAL WHEN RESTORING ROAD SURFACES, USE MATERIAL REQUIRED BY STATE OR LOCAL AGENCIES. REMOVE ALL EXCESS SPOIL IN THE ACCEPTED MANNER.
   - 2.7. PROPERLY COMPACT THE TRENCH TO INSURE THE TRENCH WILL NOT SETTLE.
3. SEE GAS STANDARD 10.03 FOR A DESCRIPTION OF SUITABLE MATERIALS FOR PIPE BEDDING AND FINAL BACKFILL.



NATURAL GAS MAIN/SERVICE TRENCH DETAIL
NOT TO SCALE

PERMITING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY / DATE
ATS LETTER	PFH 1/26/2024
CSS	PFH 2/9/2024
MAJOR SITE PLAN	PFH 2/23/2024

DRAWING NAME: UTILITY DETAILS – 2

PROJECT NAME: HYATT STUDIOS HOTEL DEVELOPMENT
1060 WESTBROOK STREET, PORTLAND, ME 04102

CLIENT: GIRI HOTEL MANAGEMENT
225 WEST SQUANTUM STREET, SUITE 200, QUINCY, MA 02171

A C O R N ENGINEERING, INC.
ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04104
(207) 775-2655

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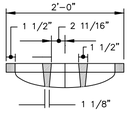
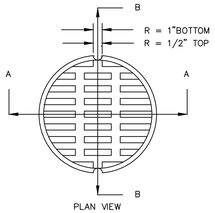
FILE:	1133_CIVIL
JN:	1133
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER
2/23/24

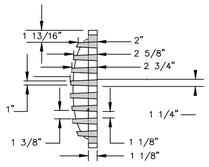
DRAWING NO.
C-44



SECTION A–A



PLAN VIEW

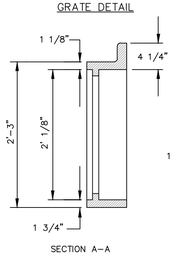


SECTION B–B

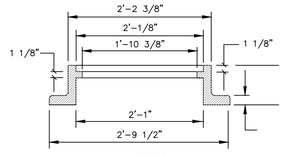
GRATE DETAIL

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



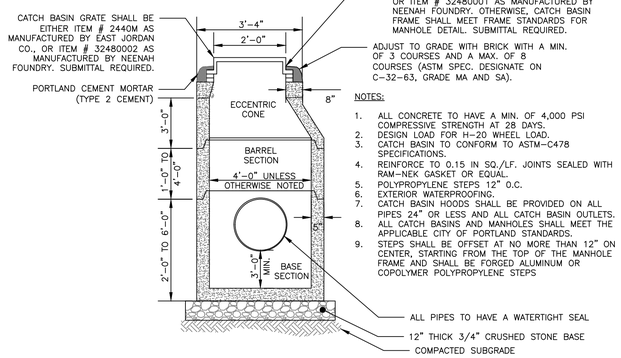
SECTION A–A



SECTION B–B

FRAME DETAIL

CATCH BASIN FRAME & GRATE
NOT TO SCALE



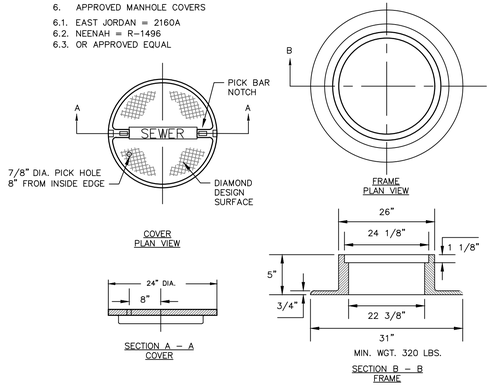
NOTES:

1. ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. DESIGN LOAD FOR H-20 WHEEL LOAD.
3. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
4. REINFORCE TO 0.15 IN SQ./LF. JOINTS SEALED WITH RAM-NEK GASKET OR EQUAL.
5. POLYPROPYLENE STEPS 12" O.C.
6. EXTERIOR WATERPROOFING.
7. CATCH BASIN HOODS SHALL BE PROVIDED ON ALL PIPES 24" OR LESS AND ALL CATCH BASIN OUTLETS.
8. ALL CATCH BASINS AND MANHOLES SHALL MEET THE APPLICABLE CITY OF PORTLAND STANDARDS.
9. STEPS SHALL BE OFFSET AT NO MORE THAN 12" ON CENTER, STARTING FROM THE TOP OF THE MANHOLE FRAME AND SHALL BE FORGED ALUMINUM OR COPOLYMER POLYPROPYLENE STEPS

PRECAST CATCH BASIN/ DRAINAGE MANHOLE
NOT TO SCALE

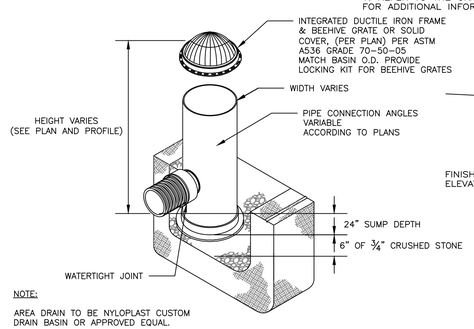
NOTES:

1. ALL MANHOLE COVERS SHALL BE SOLID AND SHALL HAVE ONE 7/8" DIAMETER DRILLED PICK HOLE, LOCATED 8" FROM THE CENTER OF THE COVER
2. ALL SANITARY AND STORMWATER/DRAIN MANHOLE COVERS SHALL BE 24" x 5".
3. ALL SANITARY MANHOLE COVERS AND SHALL HAVE "SEWER" CAST INTO THE COVER.
4. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
5. APPROVED MANHOLE FRAMES:
   5.1. EAST JORDAN = 1690Z
   5.2. NEENAH = R-1496
   5.3. OR APPROVED EQUAL
6. APPROVED MANHOLE COVERS
   6.1. EAST JORDAN = 2160A
   6.2. NEENAH = R-1496
   6.3. OR APPROVED EQUAL



CAST IRON MANHOLE COVER AND FRAME
NOT TO SCALE

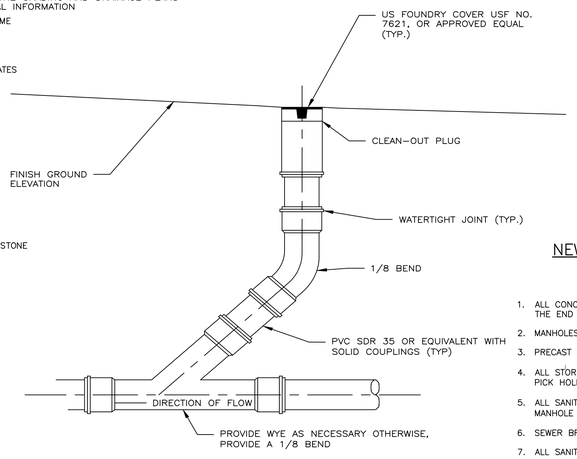
DESIGN NOTES:
1. REFER TO THE GRADING AND DRAINAGE PLANS FOR ADDITIONAL INFORMATION



NOTE:

AREA DRAIN TO BE NYLOPLAST CUSTOM DRAIN BASIN OR APPROVED EQUAL.

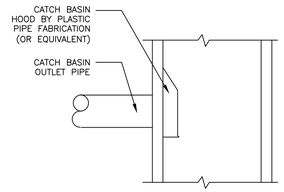
BEEHIVE DRAIN DETAIL
NOT TO SCALE



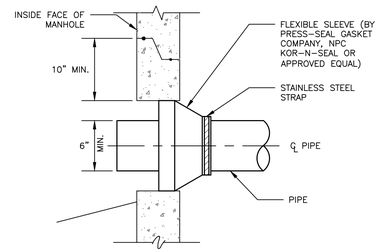
CLEANOUT DETAIL
NOT TO SCALE

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



NEW PIPE TO NEW STRUCTURE CONNECTION DETAIL
NOT TO SCALE

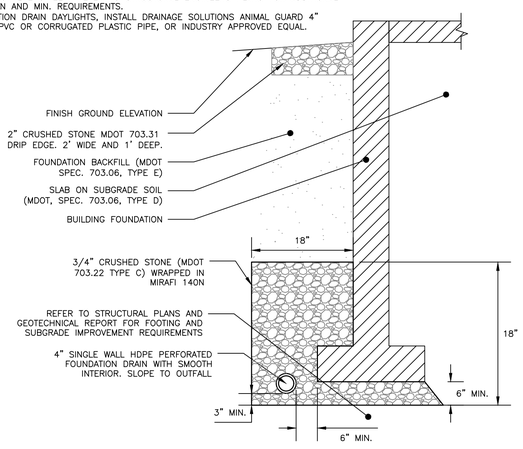
1. ALL CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 lbs. PER SQ. INCH AT THE END OF 28 DAYS, UNLESS OTHERWISE NOTED.
2. MANHOLES MAY BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE, OR CAST IN PLACE.
3. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPEC. C-478.
4. ALL STORM AND SEWER MANHOLE COVERS SHALL BE SOLD AND SHALL HAVE ONE 7/8" DIAMETER DRILLED PICK HOLE LOCATED 8" FROM THE CENTER OF THE COVER.
5. ALL SANITARY MANHOLE COVERS SHALL HAVE "SEWER" CAST INTO THE COVER. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
6. SEWER BRICK SHALL CONFORM TO ASTM SPEC. DESIGNATE ON C-32-63, GRADE MA AND SA.
7. ALL SANITARY MANHOLES SHALL HAVE A WATERPROOFING COATING APPLIED TO THE EXTERIOR SURFACE.
8. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48-CLASS 35.
9. EXISTING MANHOLES, CATCH BASINS, FRAMES, AND COVERS SHALL BE SALVAGED BY THE CONTRACTOR, AND SHALL REMAIN THE PROPERTY OF THE CITY OF PORTLAND.
10. ALL CATCH BASIN OUTLETS SHALL BE INSTALLED WITH A CATCH BASIN HOOD.
11. HYDROCARBON ABSORBENT BOOM IN ALL CATCH BASINS REQUIRED BY CONTRACTOR FOLLOWING PAVING. OWNER TO MAINTAIN/REPLACE FOR 1-YEAR FOLLOWING FINAL PAVEMENT.

GENERAL NOTES FOR STORM MANHOLES AND CATCH BASINS

NOTES:

1. REFER TO THE BUILDING ARCHITECTS AND STRUCTURAL ENGINEERING 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 UNLESS OTHERWISE SPECIFIED BY THE GEOTECHNICAL ENGINEER OR STRUCTURAL ENGINEER. REFER TO STRUCTURAL ENGINEERS PLANS FOR ADDITIONAL INFORMATION AND MIN. REQUIREMENTS.
5. IF FOUNDATION DRAIN DAYLIGHTS, INSTALL DRAINAGE SOLUTIONS ANIMAL GUARD 4" EXTERNAL PVC OR CORRUGATED PLASTIC PIPE, OR INDUSTRY APPROVED EQUAL.

ROOF DRAIN DETAIL
NOT TO SCALE



FOUNDATION DRAIN DETAIL
NOT TO SCALE

PERMITING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
ATS LETTER	PFH 1/26/2024
CSS	PFH 2/9/2024
MAJOR SITE PLAN	PFH 2/23/2024

DRAWING NAME: **DRAINAGE DETAILS**

PROJECT NAME: HYATT STUDIOS HOTEL DEVELOPMENT
1060 WESTBROOK STREET, PORTLAND, ME 04102

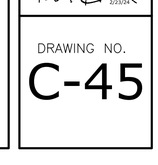
CLIENT: GIRI HOTEL MANAGEMENT
225 WEST SQUANTUM STREET, SUITE 200, QUINCY, MA 02171

ACORN ENGINEERING, INC.

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.

ACORN ENGINEERING, INC.
P.O. BOX 3476, PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1133_CIVIL
JN:	1133
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

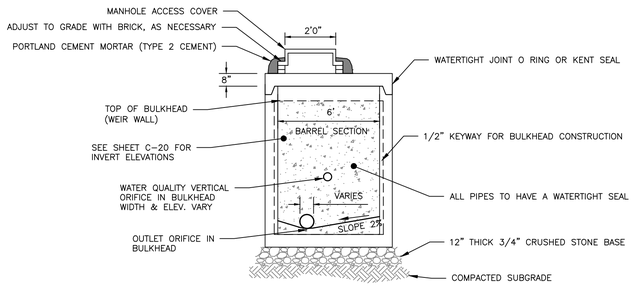


DRAWING NO.
C-45

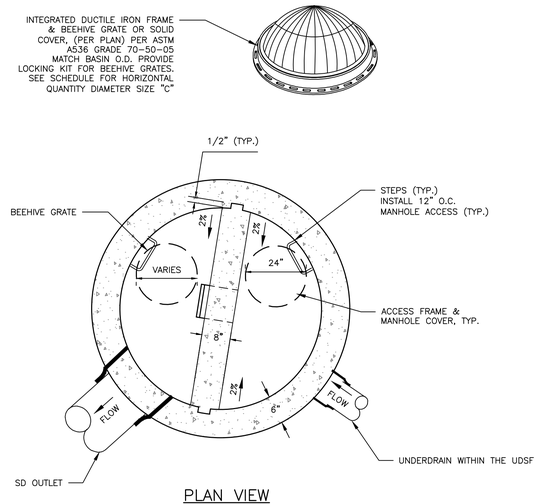
NOTES:

1. ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. DESIGN LOAD FOR H-20 WHEEL LOAD.
3. STRUCTURE TO CONFORM TO ASTM-C478 SPECIFICATIONS.
4. REINFORCE TO 0.12 IN SQ./LF.
5. JOINTS SEALED WITH BUTYL RUBBER.
6. POLYPROPYLENE STEPS 12" O.C.
7. STRUCTURE TO BE IN ACCORDANCE WITH APPLICABLE NOTES & SPECIFICATIONS OF "4'-0" DIAMETER PRECAST CATCH BASIN/DRAINAGE MANHOLE" DETAIL, SHEET C-45.

SCHEDULE			
ITEM		DIMENSION/ELEVATION	
OCS STRUCTURE		VUSF 1	VUSF 2
A	SD OUTLET	12"/71.30'	12"/71.45'
B	WATER QUALITY VERT. ORIFICE DRILLED IN BULKHEAD	1"/71.35'	1"/71.50'
C	WATER QUANTITY VERT. ORIFICE DRILLED IN BULKHEAD	6"/75.10'	4"/75.35'
D	TOP OF BULKHEAD (WEIR WALL)	75.83'	75.85'
E	UD INLET	4"/71.40'	71.55'
F	EMERGENCY SPILLWAY	77.35'	77.40'

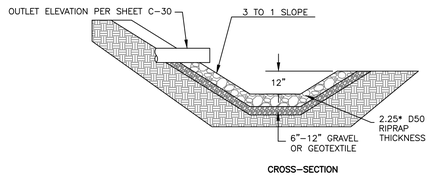


SIDE PROFILE



PLAN VIEW

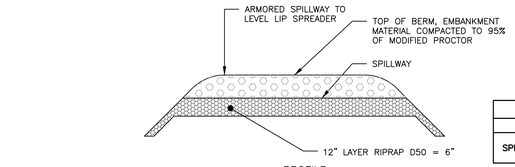
OUTLET CONTROL STRUCTURE
NOT TO SCALE



CROSS-SECTION

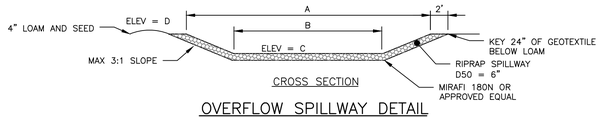
NOTE: RIPRAP SHALL BE DESCRIBED BY M.D.O.T. 703.26 EXCEPT SIZE SHALL BE AS SHOWN.

OUTLET PLUNGE POOL DETAIL
NOT TO SCALE



PROFILE

SCHEDULE		
	VUSF 1	VUSF 2
SPILLWAY WIDTH	10'	10'



CROSS SECTION

OVERFLOW SPILLWAY DETAIL
NOT TO SCALE

CONSTRUCTION OBSERVATION:

CONSTRUCTION OBSERVATION SHALL BE PROVIDED FOR EACH PHASE OF CONSTRUCTION BY ACORN ENGINEERING. THE CONTRACTOR OR OWNERS REPRESENTATIVE SHALL NOTIFY ACORN ENGINEERING A MINIMUM 48 HOURS OR 2 BUSINESS DAYS WHICH EVER IS GREATER PRIOR TO ANY OF THE PHASES OF CONSTRUCTION LISTED BELOW SO THAT THE FOLLOWING SITE VISITS MAY BE SCHEDULED.

VEGETATED UNDERDRAINED SOIL FILTER & BIORETENTION CELLS:

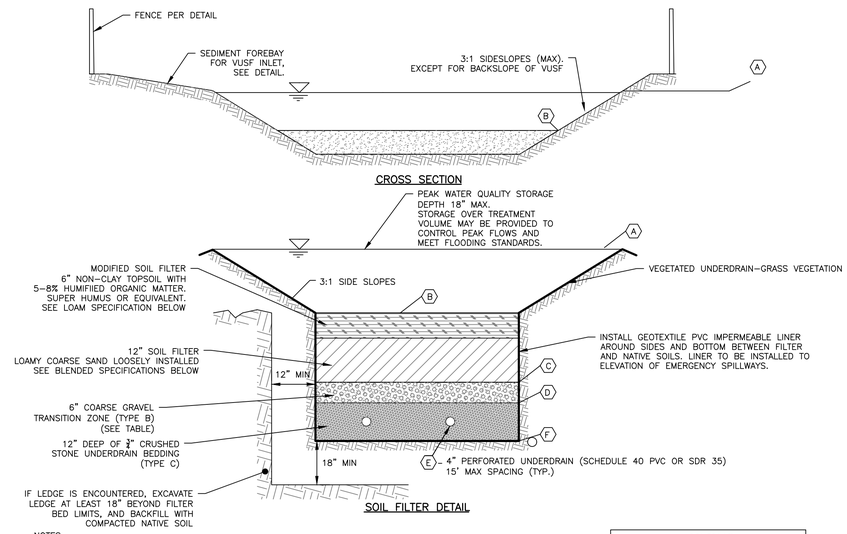
1. ONE SITE VISIT AFTER PRELIMINARY GRADING OF THE SOIL FILTER/BIORETENTION CELL GRADES.
2. ONE SITE VISIT DURING THE INSTALLATION OF THE IMPERVIOUS LINER
3. ONE SITE VISIT AFTER THE UNDER DRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED.
4. ONE SITE VISIT DURING THE CONSTRUCTION OF THE SOIL FILTER LAYER.
5. ONE SITE VISIT DURING THE CONSTRUCTION OF THE TOPSOIL LAYER.
6. ONE SITE VISIT DURING OUTLET CONTROL STRUCTURE INSTALLATION.
7. ONE SITE VISIT AFTER SLOPES AND BANKS HAVE BEEN REVEGETATED AND STABILIZED.
8. ONE SITE VISIT DURING FLOODING OF THE FILTER OR BIORETENTION CELL, IF REQUIRED.

ROOF LINE DRIP EDGES:

1. ONE SITE VISIT AFTER PRELIMINARY CONSTRUCTION & GRADING OF THE ROOF LINE DRIP EDGE.
2. ONE SITE VISIT DURING INSTALLATION OF THE UNDERDRAIN.
3. ONE SITE VISIT DURING FILTER LAYER INSTALLATION.
4. ONE SITE VISIT DURING RESERVOIR LAYER INSTALLATION.

LEVEL LIP SPREADER & PLUNGE POOL:

1. ONE SITE VISIT AFTER PRELIMINARY GRADING OF THE LEVEL LIP SPREADER.
2. ONE SITE VISIT DURING STORMDRAIN INSTALLATION.
3. ONE SITE VISIT DURING CONSTRUCTION OF THE ENTRANCE DRAINAGE CHANNEL OR RIPRAP PLUNGE POOL.



SOIL FILTER DETAIL

NOTES:

1. THE SIDESLOPES SHALL BE STABILIZED WITH A MIN. OF 4" LOAM, EROSION CONTROL BLANKETS SC150BN BY NORTH AMERICAN GREEN OR APPROVED EQUAL AND A CONSERVATION SEED MIX. THE BOTTOM OF THE VEGETATED UNDERDRAIN SHALL BE STABILIZED WITH EROSION CONTROL BLANKETS SC150BN BY NORTH AMERICAN GREEN OR APPROVED EQUAL AND A CONSERVATION SEED MIX
2. LIGHT COMPACTION SOIL FILTER AND PIPE BEDDING MATERIAL. (90 TO 92% STANDARD PROCTOR). TESTING SHALL BE PERFORMED BY A QUALIFIED MATERIAL TESTING FIRM.
3. THE SOIL FILTER MEDIA SHALL NOT BE CONSTRUCTED UNTIL THE AREA DRAINING TO THE BASIN HAS BEEN PERMANENTLY STABILIZED.
4. THE SEDIMENT FOREBAY SHALL BE CONSTRUCTED PRIOR TO CONSTRUCTION OF THE SOIL FILTER AND INSPECTED AND MAINTAINED DURING CONSTRUCTION. MAINTENANCE SHALL INCLUDE REMOVAL OF ANY ACCUMULATED SEDIMENT.
5. MINIMUM UNDERDRAIN SLOPE 0.0025 FT/FT FOR POSITIVE DRAINAGE TOWARDS THE OUTLET.
6. TESTING: SIEVE ANALYSIS INCLUDING HYDROMETER TESTING FOR CLAY CONTENT FOR EACH LAYER SHALL BE PERFORMED BY A QUALIFIED SOIL TESTING LABORATORY AND SUBMITTED TO THE PROJECT ENGINEER FOR APPROVAL 2 WEEKS PRIOR TO CONSTRUCTION. ALL TESTING AND SUBMITTALS SHALL BE IN ACCORDANCE WITH THE MAINE DEP - TECHNICAL DESIGN MANUAL SECTION 7.2.5 TESTING AND SUBMITTALS.

SCHEDULE		
ITEM	VUSF 1	VUSF 2
(A) OVERFLOW SPILLWAY	77.35'	77.40'
(B) TOP OF SOIL FILTER	74.30'	74.50'
(C) TOP OF GRAVEL	72.80'	73.00'
(D) TOP OF STONE	72.30'	72.50'
(E) UNDERDRAIN INVERT	71.55'	71.75'
(F) BOTTOM OF STONE	71.30'	71.50'

6" SOIL FILTER BED - LOAM TOPSOIL SPECIFICATION	
SIEVE SIZE	% PASSING BY WEIGHT
#4	75-95
#10	60-90
#40	35-85
#200	20-70
1. CLAY FRACTION <2% PASSING THE #200 SIEVE. 2. LOAM SHALL BE LOOSE AND FRIABLE AND SHALL BE FREE FROM ADMIXTURE OF SUBSOIL, REFUSE, LARGE STONES, CLODS OR ROOTS OR RHIZOMES OR "WITCH GRASS" OR OTHER UNDESIRABLE GRASSES.	

SOIL FILTER BED - SUPERHUMUS OR EQUIV. SPECIFICATION	
SIEVE SIZE	% PASSING BY WEIGHT
1"	100
#200	0-5
MINIMAL CLAY CONTENT, NO MORE THAN 3-5% PASSING #200 SIEVE	

SOIL FILTER BED - LOAMY COARSE SAND SPECIFICATION	
SIEVE SIZE	% PASSING BY WEIGHT
#10	85-100
#20	70-100
#60	15-40
#200	8-15
1. CLAY FRACTION <2% PASSING THE #200 SIEVE.	

SOIL FILTER BED - TRANSISTION ZONE (TYPE B)	
SIEVE SIZE	% PASSING BY WEIGHT
1"	90-100
1/2"	75-100
#4	50-100
#20	15-80
#50	0-15
#200	0-5

SOIL FILTER BED - UNDERDRAIN BEDDING (TYPE C)	
SIEVE SIZE	% PASSING BY WEIGHT
1"	100
3/4"	90-100
3/8"	0-75
#4	0-25
#10	0-5

VEGETATED UNDERDRAINED SOIL FILTER (VUSF) DETAIL
NOT TO SCALE

PERMITING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
ATS LETTER	PFH 1/26/2024
CSS	PFH 2/9/2024
MAJOR SITE PLAN	PFH 2/23/2024

DRAWING NAME: **DRAINAGE DETAILS - 2**

PROJECT NAME: HYATT STUDIOS HOTEL DEVELOPMENT
1060 WESTBROOK STREET, PORTLAND, ME 04102

CLIENT: GIRI HOTEL MANAGEMENT
225 WEST SQUANTUM STREET, SUITE 200, QUINCY, MA 02171

ACORN ENGINEERING, INC.
ENGINEERING - SURVEYING - PERMITTING
ACORN ENGINEERING, INC.
PO BOX 3237 ORONO, MAINE 04104
(207) 775-2655

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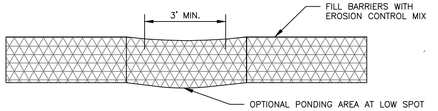
FILE: 1133_CIVIL
JN: 1133
SCALE: AS NOTED
DESIGNED BY: PFH
DRAWN BY: ZMS
CHECKED BY: WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER

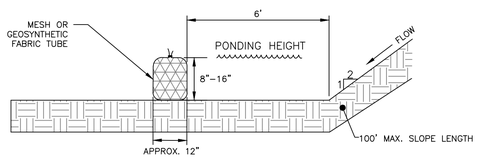
DRAWING NO.
C-46

NOTES:

1. FULL CONTACT WITH THE GROUND IS CRITICAL TO PREVENT SHORT CIRCUITING UNDER THE TUBE – THE GROUND SURFACE SHOULD BE SMOOTH AND LEVEL. IN WOODED AREAS, PROTRUDING ROOTS AND DEBRIS MAY NEED TO BE REMOVED. IN GRASSED AREAS, THE GRASS NEEDS TO BE EITHER MOWED OR COMPRESSED DOWN.
2. STAKING MAY BE NECESSARY ON STEEP SLOPES.
3. UPON FINAL STABILIZATION, THE TUBE CAN BE CUT OPEN AND THE MATERIAL SPREAD OUT ONTO THE GROUND. THE MESH MATERIAL SHOULD BE REMOVE.
4. LOOSE COMPOST MAY BE BACKFILLED ALONG THE UPSLOPE SIDE OF THE COMPOST FILTER SOCK, FILLING THE SEAM BETWEEN THE SOIL SURFACE AND THE DEVICE, IMPROVING FILTRATION AND SEDIMENT RETENTION.

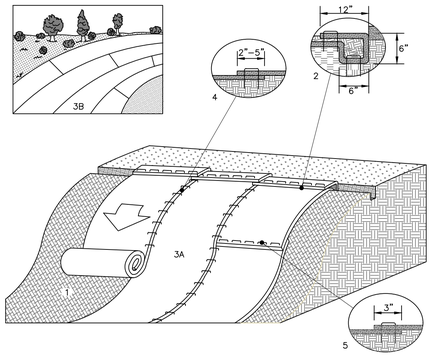


FRONT VIEW



SIDE VIEW

FILTER SOCK DETAIL
NOT TO SCALE

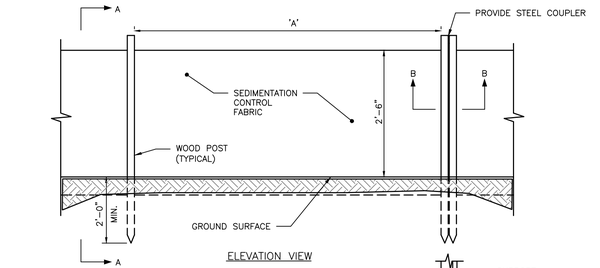


SLOPE INSTALLATION DETAIL

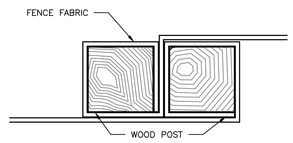
1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (ECB), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE ECB IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF ECB EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE ECB WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO THE COMPACTED SOIL AND FOLD THE REMAINING 12" PORTION OF ECB BACK OVER THE SEED AND COMPACTED SOIL. SECURE ECB OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE ECB.
3. ROLL THE ECB (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. ECB WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL ECB MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
4. THE EDGES OF PARALLEL ECB MUST BE STAPLED WITH APPROXIMATELY 2" – 5" OVERLAP DEPENDING ON THE ECB TYPE.
5. CONSECUTIVE ECB SPLICED DOWN THE SLOPE MUST BE END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE ECB WIDTH.

NOTE:
IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE ECB.

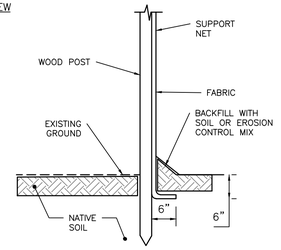
EROSION CONTROL BLANKET SLOPE INSTALLATION
NOT TO SCALE



ELEVATION VIEW



SECTION B–B



SECTION A–A

SILT FENCE REINFORCEMENT	MAX. SPACING "A"
NONE	6'
WIRE REINFORCEMENT 14 GAUGE, 6" MESH	10'

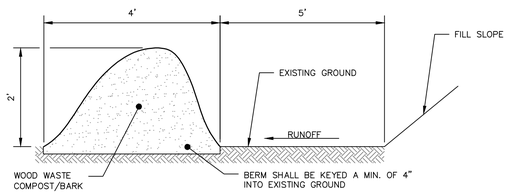
SILTATION FENCE DETAIL
NOT TO SCALE

NOTES:

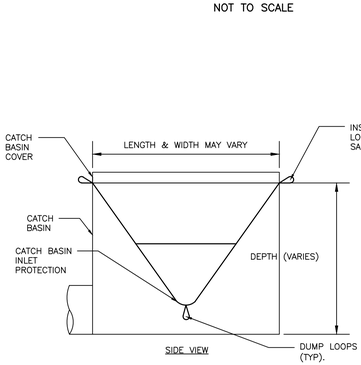
1. THE EROSION CONTROL MIX SHALL CONFORM TO THE FOLLOWING STANDARDS AND IN ACCORDANCE WITH THE MAINE DOT CHAPTER 700, SECTION 717.04(D):

1.1. pH BETWEEN 5.0 – 8.0
1.2. PARTICLE SIZE (BY WEIGHT):
1.2.1. 100% PASSING A 150 MM (6 IN) SCREEN
1.2.2. 75 TO 85% PASSING A 19 MM (0.75 IN) SCREEN
1.3. SOLUBLE SALTS CONTENT < 4.0 MMHOS/CM
1.4. ORGANIC MATTER 20 TO 100% , DRY WEIGHT BASIS

2. THE BERM SHOULD BE PLACED, UNCOMPACTED, ALONG A RELATIVELY LEVEL CONTOUR, WHEN NECESSARY THE BERM MAY BE PLACED PERPENDICULAR TO THE SLOPE ALONG THE PROPERTY LINE TO CONTAIN THE SEDIMENT PROVIDED A BERM IS LOCATED AT THE BASE OF THE SLOPE.
3. THE BERM MAY BE USED IN LIEU OF SILTATION FENCE, AT THE TOE OF SHALLOW SLOPES, ON FROZEN GROUND, LEDGE OUT CROPS, VERY ROOTED FORESTED AREA OR AT THE EDGE OF GRAVEL PARKING AREAS.
4. WHERE A BERM IS USED AT THE BASE OF A SLOPE GREATER THAN 8%, ANOTHER MEASURE SHALL BE USED IN CONJUNCTION WITH A BERM, SUCH AS A SILT FENCE.
5. BERMS SHALL REMAIN IN PLACE UNTIL UPSTREAM AREA IS STABILIZED OR 90% CATCH OF VEGETATION IS ATTAINED. BERMS SHALL BE REMOVED OFFSITE OR BY SPREADING SUCH THAT NATIVE EARTH CAN BE SEEN BELOW.



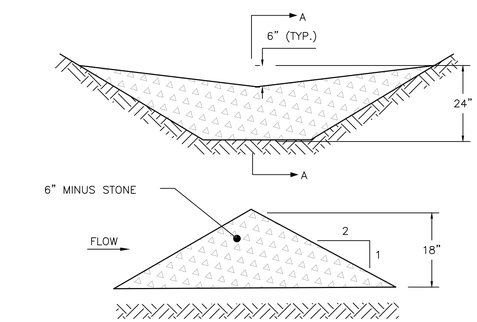
EROSION CONTROL MIX BERM DETAIL
NOT TO SCALE



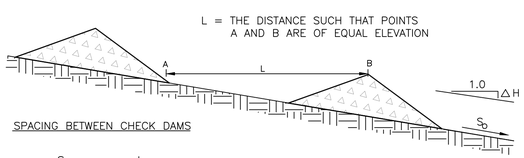
NOTES:

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



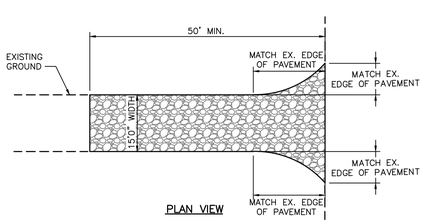
SECTION A–A



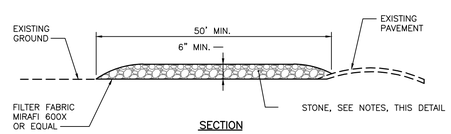
SPACING BETWEEN CHECK DAMS

S_0 (FT./FT.)	L (FT.)
0.020	75
0.030	50
0.040	40
0.050	30
0.080	20
0.100	10

STONE CHECK DAM
NOT TO SCALE



PLAN VIEW



SECTION

NOTES:

1. CONTRACTOR SHALL ADD STONE TO ENTRANCE AS MUD/SILT MATERIAL ACCUMULATES
2. STONE SHALL BE 2"–3" COARSE AGGREGATE
3. CONSTRUCTION ENTRANCE SHALL BE GRADED TO NOT ALLOW ANY STORMWATER TO BE CONVEYED OFF SITE. IN SITUATIONS WHERE THIS IS NOT POSSIBLE, ANY STORMWATER CONVEYED OFFSITE SHALL BE TREATED OR RETAINED IN A MANNER APPROVED BY ENGINEER.
4. WHEN NECESSARY, ON–SITE VEHICLES SHALL HAVE THEIR WHEELS CLEANED PRIOR TO LEAVING SITE.
5. CONSTRUCTION ENTRANCE SHALL BE GRADED IN A MANNER THAT PREVENTS TRACKING OF SEDIMENTS ONTO PUBLIC RIGHT–OF–WAY

STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE

PERMITING
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
ATS LETTER	PFH 1/26/2024
CSS	PFH 2/9/2024
MAJOR SITE PLAN	PFH 2/23/2024

DRAWING NAME: **EROSION & SEDIMENTATION CONTROL DETAILS**
PROJECT NAME: HYATT STUDIOS HOTEL DEVELOPMENT
1060 WESTBROOK STREET, PORTLAND, ME 04102
CLIENT: GIRI HOTEL MANAGEMENT
225 WEST SQUANTUM STREET, SUITE 200, QUINCY, MA 02171

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN AUTHORIZATION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS MADE TO THESE PLANS WITHOUT WRITTEN AUTHORIZATION FROM ACORN ENGINEERING, INC. SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
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PO BOX 4337 PORTLAND, MAINE 04104
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JN: 1133
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DESIGNED BY: PFH
DRAWN BY: ZMS
CHECKED BY: WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER

DRAWING NO.
C-47

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 FILTER SOCKS SHALL BE INSTALLED DOWN GRADIENT OF ANY DISTURBED AREAS TO TRAP RUNOFF BORNE SEDIMENTS UNTIL PERMANENT STABILIZATION IS ACHIEVED. THE FILTER SOCKS 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 SOCKS. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THE SOCKS, 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 MUD AND DUST FROM THE SITE TRACKED ONTO WESTBROOK STREET & JETPORT BOULEVARD SHALL BE REMOVED BY VACUUMING, PRIOR TO A PREDICTED RAIN EVENT, AND AS OTHERWISE DEEMED 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.

1.1.8 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, LIMED, AND MULCH 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 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, 90% 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 UNSTABILIZED.

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, FILTER SOCKS 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 90% 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 90% 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 CONTROLS, 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 WORKING WEEKS, AS WELL AS AFTER A "STORM EVENT". A "STORM EVENT" SHALL CONSIST OF 0.5 INCHES OF RAIN OR SNOWMELT WITHIN A 24 HOUR PERIOD. THE FOLLOWING EROSION AND SEDIMENT CONTROL – BEST MANAGEMENT PRACTICES (BMP'S) SHALL INSPECTED IN THE MANNER AS DESCRIBED. THE SCOPE OF INSPECTIONS INCLUDE DISTURBED AND IMPERVIOUS AREAS, MATERIAL STORAGE AREAS, VEHICLE ACCESS POINTS & ANY OTHER EROSION CONTROL MEASURES NOT DIRECTLY LISTED. THE CONTRACTOR SHALL PERFORM REPAIRS AS NEEDED TO ENSURE EROSION CONTROL MEASURES PERFORM AS DESIGNED. IF CORRECTIVE ACTION IS REQUIRED, THE REPAIR WORK SHALL BE STARTED BY NO LATER THAN THE END OF THE FOLLOWING WORKDAY AND COMPLETED WITHIN ONE WEEK, OR BEFORE THE NEXT PREDICTED "STORM EVENT." THE CONTRACTOR SHALL PROVIDE ALL NECESSARY REGULATING AGENCIES WITH WRITTEN DOCUMENTATION DESCRIBING INSPECTION DATES AND NECESSARY WORK TO MAINTAIN EROSION CONTROL MEASURES MEETING THE REQUIREMENTS SPECIFIED IN THIS PLAN SET.

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 THE APPLICANT BEARS THE RESPONSIBILITY OF MAINTAINING FOR AT LEAST FIVE (5) YEARS, THE INSPECTION FORMS AND DOCUMENTATION OF CORRECTIVE ACTIONS TAKEN DURING CONSTRUCTION.

5.7 EROSION AND SEDIMENTATION CONTROL INSPECTIONS:

ACORN ENGINEERING HAS PERSONNEL QUALIFIED TO CONDUCT EROSION AND SEDIMENTATION CONTROL INSPECTIONS. FOR FURTHER INFORMATION CONTACT:

CONTACT: PETER HEIL, PE
TELEPHONE: (207) 775–2655

QUALIFICATIONS:

- MAINE PROFESSIONAL ENGINEERING LICENSE #15318
- MAINE DEP – CERTIFIED IN MAINTENANCE & INSPECTION OF STORMWATER BMP'S CERT
- MAINE DEP – CERTIFIED THIRD–PARTY INSPECTOR
- CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC) CERT. #7071

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. RELOCATE EXISTING UTILITIES.
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–P2O5–K2O) OR EQUIVALENT. FERTILIZER SHALL NOT BE APPLIED TO INFILTRATION BASIN ONCE AMENDED.

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	

PERMANENT SEED APPLICATION RATES

SEED	LBS / ACRE
KENTUCKY BLUEGRASS	20.00
CREEPING RED FESCUE	20.00
PERENNIAL RYEGRASS	4.80
TOTAL	44.8 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.

HOUSEKEEPING

1. SPILL PREVENTION. CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM CONSTRUCTION AND WASTE MATERIALS STORED ON SITE TO ENTER STORMWATER, WHICH INCLUDES STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER. THE SITE CONTRACTOR OR OPERATOR MUST DEVELOP, AND IMPLEMENT AS NECESSARY, APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING MEASURES.

NOTE: ANY SPILL OR RELEASE OF TOXIC OR HAZARDOUS SUBSTANCES MUST BE REPORTED TO THE DEPARTMENT. FOR OIL SPILLS, CALL 1–800–482–0777 WHICH IS AVAILABLE 24 HOURS A DAY. FOR SPILLS OF TOXIC OR HAZARDOUS MATERIAL, CALL 1–800–452–4664 WHICH IS AVAILABLE 24 HOURS A DAY. FOR MORE INFORMATION, VISIT THE DEPARTMENT'S WEBSITE AT : HTTP://WWW.MAINE.GOV/DEP/SPILLS/EMERGSPILLRESP/

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.

SEE APPENDIX D FOR LICENSE BY RULE STANDARDS FOR INFILTRATION OF STORMWATER.

NOTE: LACK OF APPROPRIATE POLLUTANT REMOVAL BEST MANAGEMENT PRACTICES (BMPS) MAY RESULT IN VIOLATIONS OF THE GROUNDWATER QUALITY STANDARD ESTABLISHED BY 38 M.R.S.A. §465–C(1).

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 INCLU

Calculation Summary						
Label	Units	Avg	Max	Min	Avg/Min	Max/Min
ENTIRE AREA	Fc	0.25	3.4	0.0	N.A.	N.A.
PARKING LOT	Fc	0.92	2.5	0.3	3.07	8.33

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Description	Tag	LLF	Luminaire Lumens	Luminaire Watts	Total Watts
	1	P3A	Single	COOPER: GALN-SA1B-730-U-SL3-CXX	MTD ON 20' VALMONT POLE: DS330-400Q200-D1-FP COOPER CXX-FBC-AB	0.900	5197	44	44
	1	P3B	Single	COOPER: GALN-SA1D-730-U-SL3-CXX	MTD ON 20' VALMONT POLE: DS330-400Q200-D1-FP COOPER CXX-FBC-AB	0.900	7066	65	65
	3	P5-2	Back-Back	COOPER: GALN-SA1B-730-U-SWQ-CXX	MTD ON 20' VALMONT POLE: DS330-400Q200-D2-FP COOPER CXX-FBC-AB	0.900	5486	44	264
	6	W2	Single	COOPER: ENC-SA1A-730-U-SL2-CXX	WALL MTD 12' AFG	0.900	2459	20.1	120.6
	1	W4FT	Single	COOPER: ENC-SA1C-730-U-T4FT-CXX	WALL MTD 12' AFG	0.900	3933	33.3	33.3
	4	W4W	Single	COOPER: ENC-SA1A-730-U-SL4-CXX	WALL MTD 12' AFG	0.900	2361	20.1	80.4

CHARRON REFLEX LIGHTING

Revisions

#	Date	Comments

Drawn By: Michael O'Brien
Checked By:
Date: 2/21/2024
Contact: mobrien@charroninc.com
Scale: NTS

1060 Westbrook Street

Portland, ME

Page M of 1



ISSUED FOR	BY	DATE
CONCEPT	PFH	2/7/2020

DRAWING NAME: **SITE DISTANCE EXHIBIT**

PROJECT NAME: HYATT STUDIOS JETPORT
1060 WESTBROOK STREET, PORTLAND, ME 04102

CLIENT: GIRI HOTEL MANAGEMENT
225 WEST SQUANTUM STREET, SUIT 200, QUINCY, MA 02171

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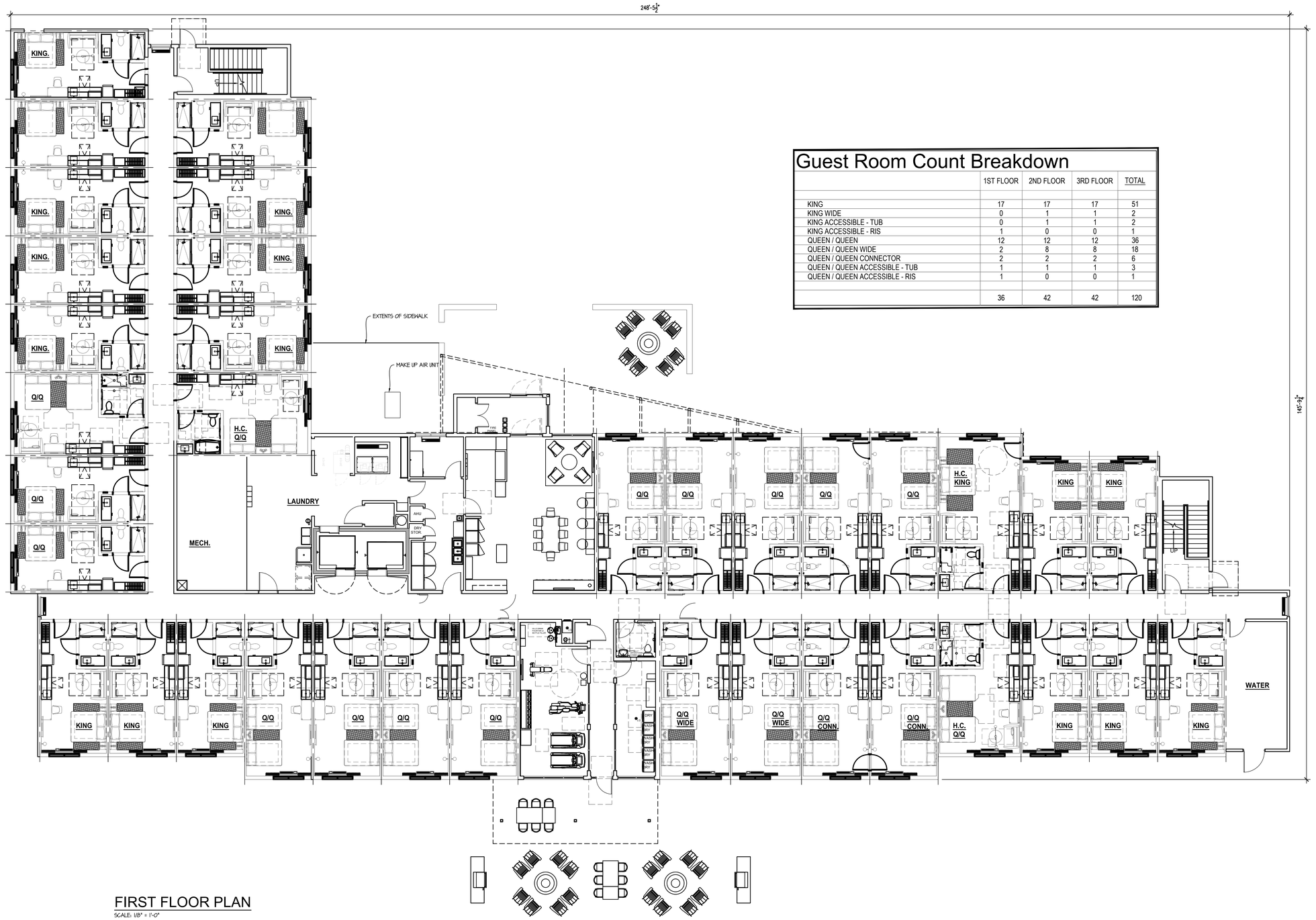
ACORN ENGINEERING, INC.
P.O. BOX 3367, PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1133_CIVIL
JN:	1133
SCALE:	AS NOTED
DESIGNED BY:	PFH
DRAWN BY:	ZMS
CHECKED BY:	WHS

DRAWING NO.
EX



Guest Room Count Breakdown

	1ST FLOOR	2ND FLOOR	3RD FLOOR	TOTAL
KING	17	17	17	51
KING WIDE	0	1	1	2
KING ACCESSIBLE - TUB	0	1	1	2
KING ACCESSIBLE - RIS	1	0	0	1
QUEEN / QUEEN	12	12	12	36
QUEEN / QUEEN WIDE	2	8	8	18
QUEEN / QUEEN CONNECTOR	2	2	2	6
QUEEN / QUEEN ACCESSIBLE - TUB	1	1	1	3
QUEEN / QUEEN ACCESSIBLE - RIS	1	0	0	1
	36	42	42	120

FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"

HYATT STUDIOS

JETPORT - PORTLAND, ME

#223088

02-26-24

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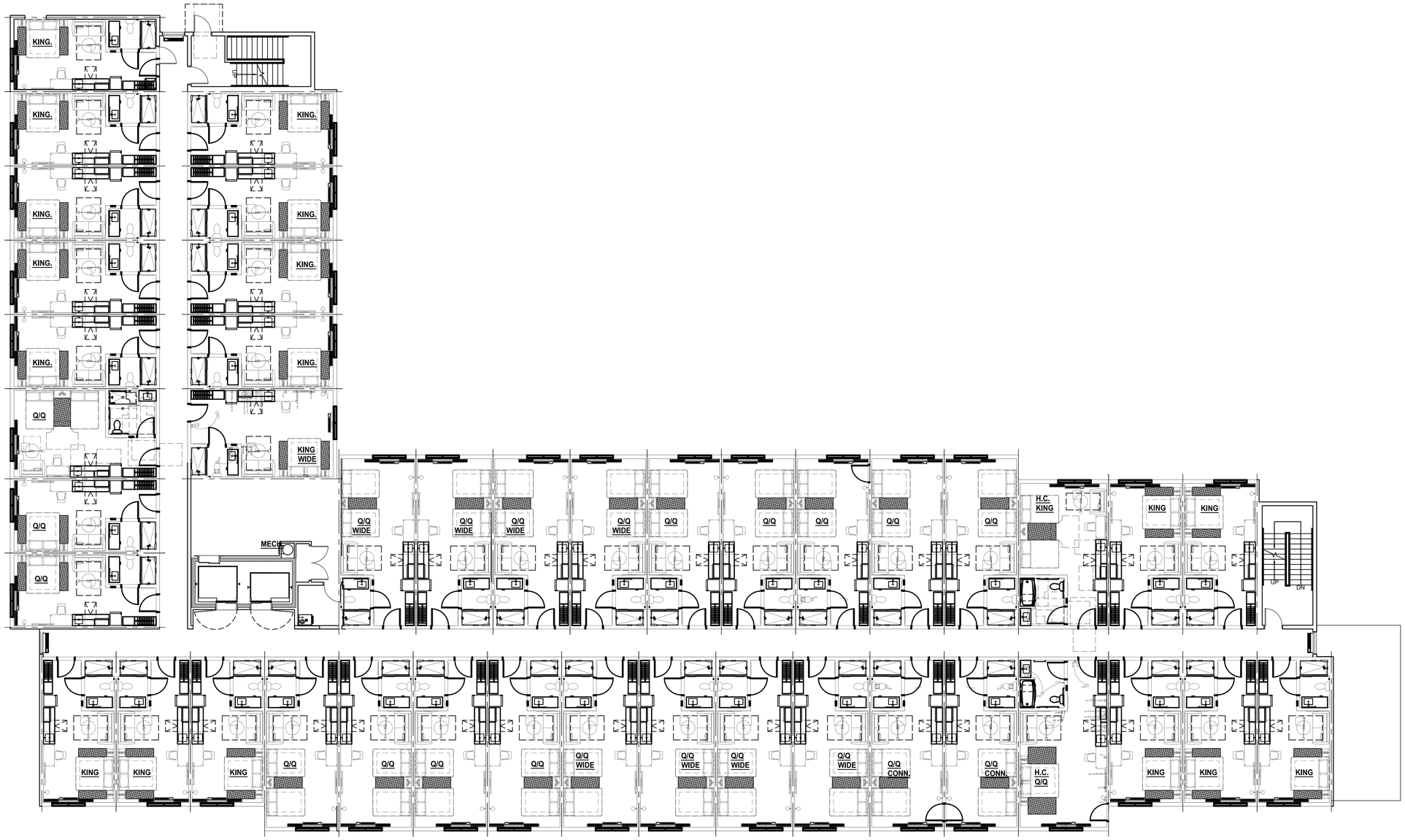

SECOND & THIRD FLOOR PLANS

SCALE: 1/8" = 1'-0"

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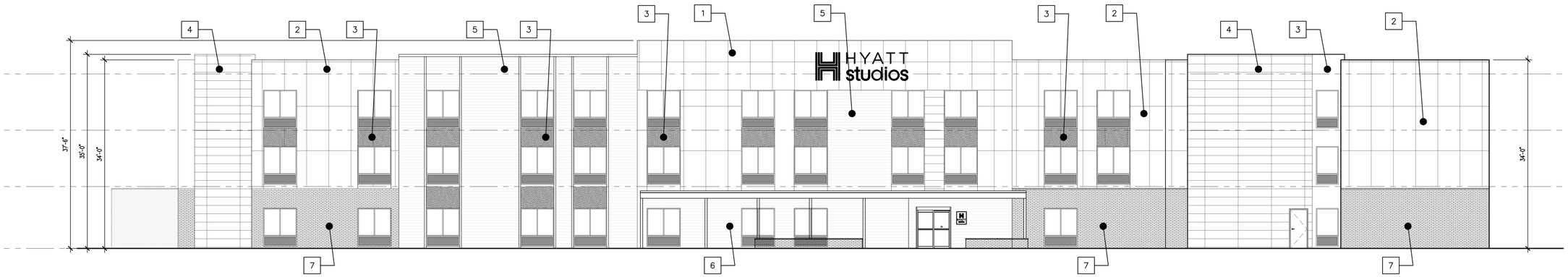


NORTH ELEVATION

SCALE: 1/8" = 1'-0"



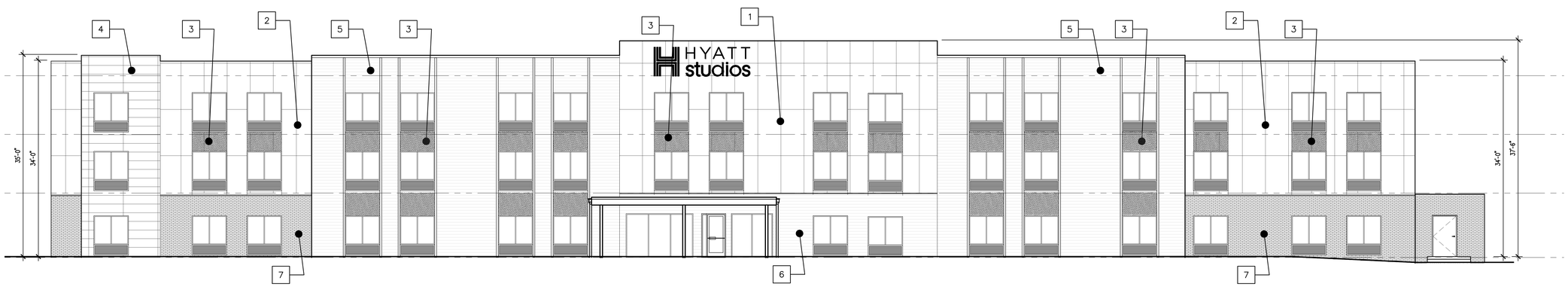
WEST ELEVATION

SCALE: 1/8" = 1'-0"



EAST ELEVATION

SCALE: 1/8" = 1'-0"



SOUTH ELEVATION

SCALE: 1/8" = 1'-0"

KEYNOTE LEGEND - EXTERIOR ELEVATIONS			
TAG #	MATERIAL	MANUFACTURER	SIZE / COLOR
1	FIBERCEMENT PANEL	JAMIES HARDIE	ARTIC WHITE
2	FIBER CEMENT PANEL	JAMIES HARDIE	LIGHT MIST
3	FIBER CEMENT PANEL	JAMIES HARDIE	IRON GRAY
4	FIBER CEMENT REVEAL PANEL	JAMIES HARDIE	18"H x 72"W, H GREY SLATE
5	FIBER CEMENT LAP SIDING	JAMIES HARDIE	4"H, GREY SLATE
6	FIBER CEMENT LAP SIDING	JAMIES HARDIE	6"H, WOOD PILE
7	FIBERCEMENT BRICK PANEL	NICHIHA	MIDNIGHT
8	DOWNSPOUT	BY G.C.	
9	PTAC LOUVER	BY G.C.	PREFINISHED TO MATCH WINDOW FRAME
10	ROOF SCUPPER	BY G.C.	

GENERAL NOTES

1. GUTTERS, DOWNSPOUTS, DOOR HOODS, HOLLOW METAL STEEL DOORS, FRAMES, EXPOSED METAL FLASHING, AND EXPOSED MISCELLANEOUS STEEL SHALL MATCH ADJACENT BUILDING COLOR UNO.
2. GC TO COORDINATE SIGNAGE WITH SELECTED SIGN VENDOR. PROVIDE POWER, BLOCKING, ETC. AS REQUIRED.
3. ANY NON PROTOTYPICAL MATERIAL SUBSTITUTION NEEDS TO BE SENT TO HYATT FOR REVIEW.
4. REFER TO HYATT TECHNICAL STANDARDS FOR BUILDING EXTERIOR FINISHES AND CANOPY REQUIREMENTS.

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